

Teesside Survey & Plan

Final report to the Steering Committee

Volume I: Policies and Proposals

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Ministry of Housing and Local Government
Ministry of Transport

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Teesplan Steering Committee

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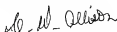
Foreword

Foreword by Sir Charles Allison, CBE, JP, Chairman of the Steering Committee:

It is now some four years since Dame Evelyn Sharp, who was at that time Permanent Secretary of the Ministry of Housing and Local Government, persuaded us to carry out this planning exercise. Thereafter a Steering Committee was set up under my Chairmanship to deal with the appointment of consultants and take broad decisions on the scope of the survey and its financing. Shortly afterwards, Mr. J. J. Gardner undertook the secretarial duties and I went to pay

tribute to the capacity and direction he gave to the Committee subsequently.

With the consultants, our aim was simple: to provide a comprehensive plan for an expanding Teesside, which would deal with problems ranging beyond local authority boundaries then existing. We have tried to approach our task without preconception and deal with the consultants' proposals as presenting the best solution to the planning needs and problems of the survey area as a whole.



Acknowledgements

Our two firms were commissioned to carry out the Survey in Plan in 1965. The firm of Ian Laurie and Brian Clouston, Landscape Consultants, has been closely associated with all phases of the work, bearing special responsibility for matters relating to landscape, recreation and natural resources but also being deeply involved in more general urban structure planning. The firm of Tippetts-Abbett-McCarthy-Stratton, Engineers and Architects, New York gave valuable advice and assistance on survey procedures and the transportation analysis which were closely integrated with the methods used in the Greater Glasgow Transportation Study. John Perry Lewis, Professor of the Economics of Regions and Towns in the University of Manchester, has given valuable advice throughout the three years, particularly in the fields of economics, statistics and demography.

The work of the Survey in Plan has been made possible only by the active co-operation of many other organisations and people on Teesside. Foremost have been the members of our Steering and Technical Committees, of whom special mention should be made of Aldermen Sir Charles Allison, Chairman of the former committee, Mr. J. A. Kenyon, Chairman of the latter, and Mr. J. J. Gardner, who is Secretary to both. Officers of the Ministry of Housing and Local Government and Ministry of Transport, of the transport undertakings and of the various departments of the local authorities have given valuable advice and technical assistance throughout the project.

Advice on technical matters has been given, too, by other Government departments, particularly the Board of Trade; the Ministries of Labour, Agriculture, Fisheries and Food; Power; and the Registrar General.

Finally, there has been the willing assistance of a host of private individuals and organisations on Teesside. The response from local employers and industrialists in supplying information and answering our questions was excellent. Equally so was the co-operation of the people of Teesside in completing our survey forms in their homes and on their journeys through Teesside.

To all these people we offer our sincere thanks.

Hugh Wilson and Lewis Womersley
Scott Wilson Kirkpatrick and Partners

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Summary of the report

Teesside in 1966

1 Teesside is an area of 360 square miles around the estuary of the river Tees, with a population in 1966 of 478,000. At the time of survey, it was administered by a number of local authorities but amalgamations on 1st April, 1968 have reduced the number to the Teesside County Borough (population, 383,000); parts of North Riding County (population, 67,000); and parts of County Durham (population, 18,000). Teesside is defined in figure 1.1.

2 The urban structure of Teesside comprises six towns, Middlesbrough, Stockton, Eton, Redcar, Billingham and Thornaby, set in open countryside that rises to the North York Moors National Park five miles to the south. East Cleveland is the district on the coast between Redcar and the National Park; formerly an important mining area, it is now an area of economic decline.

3 Teesside is served by a north-south trunk road, the A19, and a main north-south railway from York to Sunderland and Newcastle upon Tyne. These two routes also form an alternative means of access to Tyneside from London; the main railway and the A1 trunk road pass ten miles to the west, at Darlington. Secondary road and rail routes connect Teesside to the A1 and the main railway lines at Darlington and Durham. Teesside is served too, by docks and wharves on the river Tees, capable of taking 85,000 ton vessels, and by an airport.

4 Teesside is a self-contained sub-region having few economic links with the rest of the North East. It depends on steel, chemicals and heavy engineering which owe their growth to the availability of riverside industrial sites using the river Tees for the import of raw materials. So far, only a small amount of light industry has developed and its markets are mainly with industrial areas in the West Riding, West Midlands, north-west England and London.

The future growth of Teesside

5 The future growth of Teesside and its regional role was projected in the North East White Paper (Cmd. 2208, 1963) and by the Northern Economic Planning Council's report, *Challenge of the Changing North* (1966). They are described in chapter 2, showing that Teesside has the capacity to be the growth area of the North East, with economic development continuing to provide jobs for growth in population resulting from the high rate of natural increase and from continuing inward migration. This could mean a rise in population to 704,000 by 1981, a natural increase of 163,000 and a migration element of 82,000 including its own natural increase.

6 The effects of different assumptions about natural fertility discussed in chapter 2 are such that the total population could vary between 680,000 and 740,000 even if the migration forecast is correct. But the number of jobs needed by this population can be more accurately predicted as lying between 280,000 and 310,000 for the resident population; and between 10,000 and 20,000 to provide for the continued daily travel-to-work from Darlington, Hartlepool and the Durham coalfield. In total, this means that at least 120,000 new jobs should be created on Teesside by 1981 if the assumed migration of population is to take place.

Planning objectives

7 Five major objectives are identified as being necessary for the urban structure policy for Teesside within this regional context. They relate to the following:

- employment structure
- conservation of natural resources
- urban form
- transport system
- environmental quality and living conditions.

8 First, it is shown in the last section of chapter 2 that Teesside's employment structure must become diversified. Its present economic base is almost entirely composed of heavy industries, chemicals, steel and heavy engineering. High rates of capital investment have taken place (£88 million in 1966) and are likely to continue but rising productivity means that no increase in employment can be expected. This remains so, even after allowance has been made for the development of the remaining riverside land suitable for heavy industry. Nor will an expansion of output from these industries stimulate new development in other industries on Teesside. Sources of raw materials and the markets of heavy industries are national and international, not local.

9 The forecast growth in population to 704,000 by 1981 will create a need for about 80,000 new jobs in service industries, including retailing, administration, professional services, health and education. Many of these new jobs, however, will be for women.

10 Therefore about 60,000 new jobs will have to be created in activities and firms that were not found on Teesside in 1966. Some of these should be in central government offices, to provide a greater variety of jobs. But the majority will have to be in light manufacturing industry attracted to Teesside by a mixture of Government inducement, availability of labour and effective urban structure planning. Land is committed on new industrial estates already laid out with services for about 31,000 jobs, mainly at Eaglescliffe and Thornaby

in the west of Teesside. Seven new estates of about 100 acres each will have to be developed to provide for the remainder. Their location, as part of urban structure policy, is given in chapter 6.

11 If these jobs were created on Teesside, the result would be to offer a wider variety of economic opportunity; to make possible a greater dispersal of employment away from the riverside belt; to give more jobs for women with the consequence of raising family incomes; and to give an employment structure that would be less liable to fluctuations in employment. But the creation of 80,000 new jobs by 1991 represents an average of more than 2,000 new jobs per annum, or twice the rate on Teesside since 1960 in the provision of similar types of employment.

12 Second, Teesside's remaining natural resources, described in chapter 3, must be conserved and properly utilised. The most important of these is the use of the river Tees for navigation. Port developments are expected to continue on both banks of the lower reaches of the estuary, to accommodate larger vessels. Care should be taken that the land fronting the navigable sections of the Tees is developed only by heavy industry requiring a riverside location. This applies especially to Seal Sands where nearly 2,000 acres of reclaimable land are available for industrial and port development.

13 The other major resource of Teesside is its surrounding countryside. Its conservation centres on the preservation of the areas of ecological interest in and around the Tees estuary and on the preservation of the wider and more remote areas of the North York Moors. The rising demand for leisure in the countryside means that the conservation policy should be supplemented by the positive development of country parks to provide special facilities for recreation. Sites for four parks are recommended in chapter 5, all lying within three miles of the urbanised area by 1991. Two are in the attractive valleys of the Laver and Dillingham Beck, a third is a forest park on the moors above Great Ayton and a fourth on the moors above Eton. More detailed proposals for the first three are given in chapter 18.

14. The third planning objective for Teesside concerns its urban form. The essential characteristics of its present form and alternative strategies for its future development are described in chapter 4 and evaluated in chapter 5. Briefly, future urban development should be located close to the existing built-up area rather than in a new town, or an extended line of development or as dispersed communities. But the concentration of employment in a single large centre should be avoided and jobs should continue to be dispersed between a number of centres, as they are at present. In fact, the future location of more than 80 per cent of the employment likely by 1991 is already determined by current policies, the remaining employment being relatively flexible in its choice of location. Finally, overall densities should continue to be kept low by the development of an open space system that penetrates the built-up area and affords a setting for the primary road system, parks and playing fields, large institutions and, where feasible, agriculture and woodland.

15 The effect of this, with the other objectives, is to create a need for four areas where both residential and light industrial growth should occur and one area where only light industrial development should be encouraged. The general account of new developments is given in chapter 6 and a map of the proposed urban structure is at the back of the report. More detailed proposals for the

development of the first two areas are described in chapters 13 and 14.

a Land for about 90,000 people should be developed south-west of Thornaby, at Ingley derwold and near Yarm. This is a good location for light industry, being close to the A19 road from the south, and it offers the possibility for attractive housing areas close to the Laver valley. Much of the industrial development is already provided for at Thornaby and Eaglescliffe but little provision has yet been made for housing.

b The population of Nunthorpe, Merton and Heslington, south of Middlesbrough, should be allowed to grow by about 60,000. This area is easily accessible to central Middlesbrough and the south-bank industries yet has an attractive environment and is close to the National Park. About half of the proposed housing development is already committed by current planning policy. In addition, some light industrial development should be encouraged to give a more dispersed employment pattern.

c Further growth should take place at Wolviston, near the proposed Billingham Beck country park, accommodating about 30,000 people, together with a small amount of light industry to give a greater variety of jobs.

d The coast between Redcar and Saltburn already has planning permission for a growth in population of about 20,000, with an additional commitment for about 10,000 at Gileborough. These areas are attractive and much in demand but further development has its problems. Road access to these areas from the rest of Teesside is relatively poor, though being improved, and the scale of development may harm the very qualities that have attracted people to these environments. Therefore, only a small additional population should be provided for (about 5,000) at Merska, where the potential capacity of the rail and road systems make this possible. In addition, some light industry should be located at Merska.

e Finally, economic growth should be encouraged at East Cleveland, if possible. This area has a population of 22,000 which has remained static for at least forty years. During this time, its economic base has been eroded by the closure of the iron mines and only a single, small steelworks remains. The exploitation of peat deposits will provide some jobs but further light industries should be attracted to the area if its population is not to decline. New estates should be laid out, probably at Skelton and Loftus, and road access improved. But further substantial growth of population, even if it were likely, should not be allowed until it has been demonstrated that the area has a viable economic base.

16 Fourthly, a substantial part of chapter 5 is devoted to showing that the transportation system of Teesside must be effectively developed to provide for the needs of a community in which the number of cars is likely to rise by four times and the total number of weekday person-trips to double. The high level of car ownership in 1981 (at 36 cars per 100 persons) and the existing and committed dispersal of employment make for a situation in which it would be difficult to provide for the efficient movement of more than about 20 per cent of person-trips by public transport. But the low overall density, the dispersal of activities and the location of clearance areas make possible the construction of a primary road system that gives a good net return on the capital investment involved allowing for the savings it affords in transport operating costs. Only in the Middlesbrough central area need there be any restric-

tion on the freedom of choice between private and public transport. This would be to avoid overloading the new bridge carrying the realigned A19 across the Tees and parts of the Northern Route from the bridge to the central area. The method of assistance would be to provide 12,000 parking spaces in the central area which would allow only 69 per cent of the person-trips to be made by car compared with 78 per cent in a free choice. The local authority should therefore control the use and operation of the car parks, particularly the charges made for space, to ensure that the demand for parking does not exceed their capacity.

17 The road system would thus be a new high capacity primary road network carrying most of the traffic within Teesside, the existing roads operating as a secondary system for local access and distribution. The existing roads would continue to carry substantial volumes of traffic but, as the primary road system is constructed, their use should be recognized to make for a hierarchy of roads. In this hierarchy, the heaviest flows of traffic would be attracted to the primary roads, and traffic on local streets would be sufficiently light to give a satisfactory environment. The total capital cost of the system would be £108 million (at 1986 prices) of which £30 million is already committed with current programmes and special investment proposed in the North East White Paper.

18 The primary roads in the built-up area would mostly be to urban motorway standard, with limited access and grade separated intersections. The highway network is shown on a map at the back of the report. The main components of the primary road system are:

- a the realigned A19, the main north-south route passing between Stockton and Thornaby and largely committed;

- b the realigned A66-A1085, the main east-west route from Darlington and the A1 (M) to Redcar, giving access to Middlesbrough central area, and south bank industries and Tees Dock;

- c the South Teesside Parkway, a second east-west route from Middlesbrough to Eggleston, serving the new residential areas;

- d the Stockton Motorway and Bypass, joining the South Teesside Parkway with central Stockton, the A177 (Durham Road), and the northern section of the A19;

- e the Merton Motorway, joining the A172 (Seabrook Road), and the A171 (Guisborough Road) to Middlesbrough central area, close to new residential areas.

19 In addition, the lines of two possible long-term extensions to this system have been identified: an extension of Merton Motorway across the Tees to Seal Sands near Middlesbrough Dock, and a western bypass to Yarm. Important features of the road system, including the possible Middlesbrough Dock crossing, are described in chapter 17.

20 The public transport system would continue to be mainly bus operated with extensions and improvements to existing services. These would be supplemented by express bus services between Middlesbrough central area and the two areas of new population growth not served by rail at Wolviston and Ingleby Barwick. The other new housing areas, on the coast and at Nunthorpe, would continue to be served by rail passenger services as well as by local bus services. Finally, a special feeder bus service should be operated on a circular route in Middlesbrough central area, linking bus and rail stations, car parks and the main shopping areas.

21 The fifth planning objective is that the quality of living should be raised by improvements to the environment. A major aspect of this is the provision of suitable housing. It is shown in chapter 3, by a special survey of housing and environmental deficiency, that about 60,000 houses on Teesside, or 40 per cent of the total, are in older areas whose environmental quality needs to be substantially improved. About a third of these houses are in areas that have decayed to a stage where comprehensive clearance is necessary: a certain number could be replaced on site but most of the cleared land is either unsuitable for housing or is needed for an alternative use. The remainder are in areas where rehabilitation could reasonably take place to extend the life of the environment for about thirty years. The rehabilitation would include improvements to the dwellings and to the environment, the latter involving the clearance of houses to provide for car-parking, open spaces and other amenities. Examples of the rehabilitation of two areas, at Stockton and Middlesbrough, are described in chapter 12. The effect of the redevelopment and rehabilitation programmes would be to clear 28,000 dwellings, of which 5,000 could be replaced in their original areas but the remaining 23,000 would have to be found new sites. In addition, about 30,000 houses and their environment would require substantial rehabilitation.

22 Land would thus be required for the replacement of 23,000 cleared houses as well as for the 76,000 houses needed for the future growth in population described in chapter 3. Sites have already been committed for 51,000, mainly at Nunthorpe-Merton end on the coast. The land for the additional dwellings is located mainly at Loverslade and, to a lesser extent, at Wolviston and Nunthorpe-Merton. The private sector is better provided for in this commitment than the local authority: additional land for local authority houses will be needed by the early 1970's if the redevelopment and rehabilitation programme is not to be brought to a halt. The best location is at Ingleby Barwick even though it is sited outside Teesside County Borough, in the North Riding.

23 Another aspect of the quality of life concerns central area activities such as shopping, recreation, culture and administration. It is shown in chapter 3 that the quality of central area activities is relatively poor on Teesside, partly because of the low family incomes, partly because of the division of Teesside between the two competing centres of Stockton and Middlesbrough. Changes in employment structure should help to raise family incomes. But urban structure policy should be directed to elevating the status of Middlesbrough central area into that of a dominant regional centre for Teesside. This would be achieved by improving accessibility to the centre; by taking the opportunities afforded by slum clearance to design a spacious centre capable of long term growth; and by redeveloping the existing centre. In total, the centre should grow from 1.2 million square feet in 1988 to 2.6 million by 1991; it should be the focus of Government investment, for instance in the new Teesside Polytechnic; and it should be the administrative centre for the new County Borough. An outline plan for this transformation is given in chapter 8.

24 Elsewhere, proposals for the redevelopment of Stockton (described in chapter 10), Redcar (chapter 11) and the smaller district centres should continue and new centres planned to serve the areas of new development.

25 Finally, the appearance of Teesside should be dramatically improved by ensuring a high standard of urban design and development control; by continued

progress in ameliorating the effects of atmospheric and river pollution; and by careful attention to the treatment of the urban landscape. Features of the last of these are described in chapter 16 and proposals for the reclamation of the largest derelict area in the heart of Teesside (the Ironmasters' District at Middlesbrough) are described in chapter 8.

The development of urban structure policy

25 These five planning objectives therefore are at the heart of the urban structure policy for Teesside described in chapter 6 of the report. But they were established only after a discussion of the possibilities for the regional growth of Teesside in chapter 2; and an analysis of the character of the urban structure and its problems in chapters 3 and 4. This culminated, in chapter 5, in a comparative evaluation of seven alternative land use strategies and, for the selected land use strategy, an examination of three levels of public transport service and a series of modifications to the primary road system for the area. Finally, the priorities for further planning and development are outlined in chapter 7 and an account given of the problems of keeping under review the implementation of urban structure policy.

Local planning studies

27 The remainder of the volume is devoted to a series of local planning studies which formed an essential step in the process of defining urban structure by exploring the feasibility of significant parts of the policy.

28 One group of studies tested the proposals for certain areas. District plans were prepared for North Middlesbrough, showing the feasibility of developing a regional centre (chapter 8); for central Stockton and Redcar, mainly showing how these centres could be linked to the primary road system; for Teesside, the current land use policies needing little modification (chapters 10 and

11); and for South Middlesbrough and Lameside, the two areas for major new development (chapters 13 and 14). In addition proposals were made for the reclamation and redevelopment of the Ironmasters' District in Middlesbrough, a derelict area of decaying heavy industry (chapter 8).

29 A second group of studies demonstrated certain planning principles. Those for Portfield, Stockton and Southfield, Middlesbrough (chapter 12) explored possibilities for the redevelopment and rehabilitation of older housing areas. Three studies were made of country parks in chapter 15, that for Billingham Beck depending on the development of resources; that for the Leven valley on conservation; and that for Great Ayton Moor on the recreation possibilities of afforestation. Smaller studies are described in chapter 16 to illustrate the landscaping of industrial areas; the landscape implications of an urban motorway; and the landscape treatment of temporarily derelict areas.

30 A third group of studies establishes the feasibility of key sections of the primary road system, the selection of routes and the principles of design for major intersections in the system.

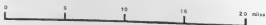
Responsibility for planning

31 The full report suggests planning policies to be developed for the whole of Teesside. Their successful implementation will depend in part on the quality of skill that is brought to bear in designing the buildings, roads and landscape of Teesside. But it will depend even more strongly on the degree to which Teesside is comprehensively planned by the three responsible authorities: Teesside County Borough, with a growth in population by 1991 of about 60,000; parts of the North Riding County in which population will rise by about 130,000; and parts of County Durham, with an additional 30,000 population.

I Introduction



Figure 1.1 TEESSIDE SURVEY AREA



1 Aims and Methods of the Plan

Summary

a The future planning and development of Teesside is given significance by its character as one of the main industrial centres of Britain, set close to beautiful countryside but with much of its urban fabric decayed. It is still a group of towns but this will change increasingly after the creation of the new Teesside County Borough on 1st April 1968.

b The Consultants in Teesside Survey & Plan were commissioned and started work on a three year programme in 1965.

c The aims that have governed the preparation of the survey and plan have been:

(i) to give a wide freedom of choice of where to live, where to work and how to travel, and of where and how to enjoy leisure;

(ii) to establish satisfactory social, physical and economic conditions throughout Teesside;

(iii) to set out clearly proposals to achieve these aims at the levels of urban structure and local planning in the spirit of the new legislation for town and country planning now before Parliament.

d Arising from these aims, the method of work relies heavily on a thorough survey and analysis of Teesside and a pragmatic testing of the alternative opportunities for its future urban structure.

The challenge of Teesside

1.1 Teesside, born in the Industrial Revolution, offers to the second half of the twentieth century both a tremendous challenge and an almost unique opportunity. The challenge lies in the legacy of nineteenth century obsolescence; the opportunity is to make it one of the most productive, efficient and beautiful regions in Britain; a region in which future generations will be able to work in clean and healthy conditions, live in dignity and content and enjoy their leisure in invigorating surroundings. For Teesside (Figure 1.1) already possesses in abundant measure those fundamental characteristics which provide the foundations for a full life, in few places does one find such modern industries, providing for men's economic prosperity, in such close proximity to a beautiful and spacious countryside, which can be the means of satisfying his recreational and spiritual needs.

1.2 The greatest impact of Teesside on the outside observer is the sheer scale of its major industries and the clearly apparent change in their type and location from those of earlier decades, the extent to which they are expanding eastwards and filling up the flat lands bordering the estuary. The most is of the remarkably sudden transition from the industrial plain to the lovely

Cleveland uplands south of the Tees and to the eastern coastal cliff scenery. Then come the exciting activities and developments of the port.

1.3 Other features which impress are less exciting but more challenging: the extent of obsolete housing and the large areas of industrial dereliction, particularly along the river banks. Except at the bridge points, views of and access to the Tees itself are singularly restricted, the river not having been regarded in the past, apparently, as a potentially stimulating and characteristic feature in the urban scene.

1.4 On commencing our study of Teesside we were particularly impressed by a paragraph contained in the 'Report and Proposals for the North Eastern General Review Area', prepared by the Local Government Commission for England, which ran as follows:

'... planning in an urban area can never be static; it must be a continuous process of adjustment to meet new developments in many forms of human activity. ... The aims of the planning of Teesside ought to include the encouragement of its industry and commerce, the reclamation of its marshlands, the construction of new roads and bridges, the renewal of the obsolete parts of the old riverside development, the designing of new centres, and the provision of new amenities.'

1.5 We feel that these words aptly summarise the objectives behind our endeavours over the last three years, endeavours which, we hope, will establish a guide to the physical development and redevelopment of Teesside so as to provide its inhabitants with a living and working environment of convenience and delight.

The setting-up of Teesside Survey & Plan

1.6 One of the proposals made by the then Secretary of State for Industry, Trade and Regional Development in the North East White Paper of 1963 was that a comprehensive survey and plan of Teesside should be commissioned, the first to be initiated in the light of the Buchanan and Crowther Reports on *Traffic in Towns*. Accordingly, discussions began in February 1964 on the commissioning of a survey and plan and a Steering Committee was set up, comprising representatives of the following:

Ministry of Housing and Local Government
Ministry of Transport
Middlesbrough County Borough Council
Durham County Council
North Riding of Yorkshire County Council
Redcar Borough Council
Stockton-on-Tees Borough Council
Thamesby-on-Tees Borough Council

Billingham Urban District Council
 Eton Urban District Council
 Guisborough Urban District Council
 Saltburn and Mablethorpe Urban District Council
 Stockton Rural District Council
 Stokesley Rural District Council
 British Railways
 United Automobile Services Limited
 Teesside Railless Traction Board

1.7 A Technical Committee was later appointed with membership drawn from officers of the organisations represented on the Steering Committee and, in July 1964, the Consultants were invited to prepare a Project Report, describing the manner in which they would propose to organise and carry out a Teesside Survey & Plan. The Consultants were appointed in July 1965 to carry out the Survey & Plan on the basis of the proposals contained in the Project Report, the work to be completed within a period of three years.

1.8 The terms of reference for the survey and plan were:

'a To take into account the growth envisaged for Teesside (as defined in paragraph (b)) both in population and employment and to work out on this basis a

unitary plan covering both the disposition of the main land uses and the transport requirements.

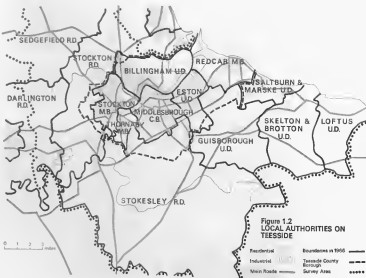
b 'Teesside' shall mean the areas of the County Borough of Middlesbrough, the Boroughs of Redcar, Stockton-on-Tees and Thorneby-on-Tees, the Urban Districts of Billingham, Eton, Guisborough and Saltburn and Mablethorpe and the Rural Districts of Stockton and Stokesley.

c To consider the industrial and commercial functions of the area, the extent to which existing industries may vary and new industries may be attracted, the likely rate of growth of population and employment and the extent of obsolescence in the physical environment.

d To produce broad planning proposals for future land uses and relate these to an improved communications system including considering in some detail the question of central area functions for commercial, civic, cultural and entertainment purposes and the site and distribution of new shopping areas, bearing in mind the needs of the individual areas making up Teesside and the extent to which they are inter-related.

e To estimate the cost and feasibility of implementing such a plan and the time scale required.

f The general planning proposal should be based on the principles of the Buchanan Report on *Traffic in*



Towns. The transport survey would cover not only road planning but the transport system generally and its objects would be:

(i) To survey in detail the existing patterns of movement of passengers and goods by road, rail, water and air as well as by public and private transport. Similarly to survey in detail existing land uses, population distribution, employment, car-ownership and other factors generating a demand for transport and to establish a quantitative relationship between these factors and the transport demand they generate;

(ii) To use this relationship to project forward a detailed pattern of future demand for transport associated with forecast changes in land use, population, car ownership and other factors;

(iii) To use these projections to test in practical and economic terms alternative plans for land use and for associated road and public transport systems.'

1.8 The area of survey and analysis is shown on figure 1.2 in relation to the boundaries of the Teesside local authorities as they existed in 1966. The re-organisation of local government on 1st April 1968 means that many of these local authorities are now grouped together to form Teesside County Borough; its boundaries are also shown on figure 1.2.

The aims of the plan

1.10 Teesside, like all urban areas, is a highly complex social organisation in which people at many levels of responsibility are carrying on a multitude of activities within an urban fabric. The activities, and the urban fabric, are continuously changing, as a consequence, mainly, of decisions taken by private individuals and organisations. For the private individual, the decisions range from buying a motor car to buying a house, from where to work to the choice of a shopping centre. In making his decision, the individual seeks to derive the greatest advantage to himself but his decision is bound to have effects on the activities of other people. His car may cause traffic congestion, or his house may block the view of others. The decisions made by organisations can have greater effects as when a property company constructs a new shopping centre or a manufacturer takes on more labour.

1.11 In this situation, where the main impetus for change comes from private individuals and organisations, the planning authority has three roles. The strongest and most positive role is its power to make decisions about public investment, say the construction of a local authority housing estate, or a new road or sewer, or the servicing of an industrial estate. Such decisions have repercussions and will stimulate other changes to the urban system, making it possible, for instance, for more people to use their cars.

1.12 In contrast to this positive role, there is the negative or regulatory function of development control, with its powers to permit or prevent development.

1.13 The third role of the planning authority is an advisory and indicative role expressed through the medium of development plans and information services. The plan sets out what are thought to be the likely and desirable changes to the urban system, the reasons for these changes, and the data and analysis on which the plan is based; it can become, in itself, a major factor influencing future changes to the urban system. By setting out the desirable course for future development and by describing the investment decisions to be made by the public sector, the development plan will give firm guidance for decisions made in the private sector.

The manufacturer, seeking a new location for his factory, will be given a forecast of the size and distribution of the supply of labour, and the means of access to alternative sites within the urban area. The shopkeeper wishing to expend his business will be able to see where the growth of population is likely to be greatest.

1.14 In the light of this view of the nature of a development plan as a planning brief for decisions to be made mainly by the private sector, our aim for Teesside Survey & Plan has been to define planning policies that:

a give present and future Teessiders a wide freedom of choice of where to live, where to work and how to travel; and of where and how to enjoy their leisure hours;

b establish satisfactory social, physical and economic conditions throughout Teesside, both in the new areas to be developed and in the redevelopment of existing outtown areas;

c set out the proposals to achieve these aims clearly, and at the levels of regional planning, urban structure planning and local (district and action area) planning in the spirit of the new legislation on town and country planning now before Parliament.

1.15 Plans and policies made with this philosophy depend greatly on a clear understanding of the present character of Teesside, its problems and potentialities; on making reasonable forecasts about the future behaviour of people so that their decisions on, say, their choice of shopping centre or means of travel can be fairly accurately predicted; and on the validity of the assumptions that guide the forecasts of future change, say, in employment or population. That is, the plans have to be based on a thorough survey of Teesside, its people and its economy; and on a clear statement of the specific planning objectives for its urban structure. The plans too must be as flexible as possible to allow for longer term growth and also to allow for variations in the short term forecasts.

1.16 This philosophy follows closely the current legislation on town and country planning foreshadowed in the Report of the Planning Advisory Group on *The Future of Development Plans* (H.M.S.O., 1966), the subsequent White Paper on Town and Country Planning (Cmd. 3333, 1967) and the Town and Country Planning Bill. In particular, it follows the hierarchical structure of plans set out in the Planning Advisory Group's report.

a The urban structure plan is concerned with 'the broad structure of the town, (in terms of) policies, objectives and standards, rather than detailed and static land use allocations... the emphasis is on the dynamics of urban growth and renewal; on the relationship between land uses and the inter-relationship of land use and transport... expressing in a clear and integrated way the policies and objectives that are to shape the town's future'.

b Local plans will be needed for the action areas where development or renewal will be taking place on a large scale over the next ten years or so; and to fill in the detail of the urban structure plans, particularly in the town centre and eventually for other districts in the town.

Method of work

The sequence of work

1.17 The full programme of work, which was spread over three years, covered three main sectors: survey,

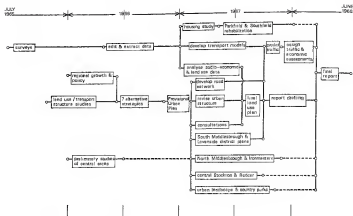


Figure 1.3 WORK PROGRAMME

computer processing and analysis; urban structure planning; and local planning. The outline of the programme is shown in figure 1.3 from which it will be seen that work was being carried out on each of the three sectors virtually throughout most of the period, although the emphasis shifted from phase to phase. Thus the first year was devoted entirely to survey work, the second to urban structure planning and the third to the transportation policy and bringing the local plans to a conclusion.

Surveys, analysis and computing

1.18 Field surveys were made during 1966 and 1968 of the landscape and topography of Teesside; local climate; agriculture and forestry; and recreation facilities. An aerial photographic survey was made in early 1967. Discussions were held with many government departments, including the Ministries of Housing and Local Government; Transport, Labour; Agriculture, Fisheries and Food; Power; the Board of Trade and the Registrar General. These provided data from unpublished sources and advice on technical methods. Discussions were held with the Teesside local authorities; statutory and transport undertakings; official and unofficial organizations all of which gave detailed information about Teesside.

1.19 Our own surveys, covering the Home Interview, Land Use, Employment and Traffic surveys, were designed so that data collected in each could be compared with that collected in other surveys and in a form suitable for processing by a range of computers. An interlocking set of zoning systems was used to facilitate the comparisons. The basic system was for the division of Teesside into 399 zones which were based on the enumeration districts in the 1961 Census of Population.

1.20 The Home Interview Survey: Approximately one in fifteen or 11,000 of the households on Teesside were visited between October 1966 and April 1968, and each was asked to give information including:

- a the age, sex, family relationship, place of work and nature of occupation of each member of the household;
- b family income, car ownership, recent migration;
- c details of the dwelling, including tenancy;
- d for each member of the household, a diary of every trip made on the previous day giving the exact time of departure and arrival, means of travel, place of origin and destination and purpose of the trip.

The survey was extended on a reduced scale for a further six months between April and October 1968 to gain data for a full year's activities.

1.21 The Land Use Survey: This was a comprehensive inventory of land use covering 45,000 separate plots of land, and listing:

- a the use and size of each plot of land;
- b environmental characteristics, including noise, traffic, landscape quality, atmospheric pollution;
- c age, condition and grossable value of buildings;
- d proximity of residential areas to open space, schools, shops and public transport.

A special feature was that the address of each Home Interview sample was identified as a single land use zone so that its land use characteristics could be matched exactly with its socio-economic and trip generation characteristics.

1.22 The Employment Surveys: Three surveys were made.

- a A postal questionnaire was sent to establishments employing at least one person, 10,000 in all. These collected information about the type of activity, the number of workers, past and present, and details of goods vehicles.

b Each manufacturing establishment employing more than 25 workers, of which there were 250, was visited between September 1965 and July 1966 and an invitation issued to complete a lengthy questionnaire covering its employment and production, both in the past, at the present, and its forecasts for the future; its movement of goods; its economic linkages within Teesside and with other parts of the country; its site characteristics; and any other problems.

c A similar survey was made of establishments in warehousing and wholesale distribution.

1.23 Other Traffic Surveys: Six surveys were carried out.

a A cordon survey was made in the autumn of 1965 whereby census points were set up on all roads crossing the boundary of the survey area, vehicles stopped and details gathered about the origin, destination, purpose of the journey, type and weight of goods carried.

b Automatic traffic counters were used continuously between October 1965 and October 1966 to measure the volume of traffic on roads throughout Teesside.

c Surveys were made of public transport usage by interviewing passengers on all public transport vehicles in October 1965 about the origin, destination and purpose of their journeys.

d Special parking surveys were carried out in the central areas of Stockton and Middlesbrough.

e An inventory of the transport system was compiled.

f A sample of goods vehicles based on Teesside was selected and a record kept of their movements during one month in 1966.

1.24 Most of the data collected in these surveys was processed by computer after it had been subjected to a certain amount of manual checking. The bulk of the checking and correction was done when the data was held on magnetic tape. Once the data had been edited in this way, a number of preliminary extractions were made so that we could gain confidence in the accuracy of the data. In some cases further corrections were made as a result of these confidence checks.

1.25 This edited and corrected data bank was used for a large number of tabulations and producing other magnetic tapes (for example, zone to zone person movements) for subsequent processing.

1.26 The main analyses for data relating to land use and economic factors were:

a forecasts of the future size and distribution of population; employment, housing demand; income and expenditure; shopping;

b an analysis and evaluation of the housing stock, the survey of housing and environmental deficiency (S.H.E.O.);

c a comparison between the locations of population and employment;

d a mathematical prediction and evaluation of the future pattern of retail sales on Teesside;

e a special study of leisure and recreation.

1.27 The main analyses for transportation were concerned with the development of mathematical models that could be used to predict future traffic on Teesside, particularly those that would:

a predict the amount of traffic produced by, and attracted to, each zone on Teesside;

b predict future levels of car ownership, the future pattern of accessibility and consequently the split between public and private modes of transport and the zone to zone distribution of traffic;

c assign this predicted traffic to a given network of roads and public transport services.

1.28 The final stage in computing was the preparation of data so that these mathematical models could be used to simulate and evaluate the consequences of the flows of traffic likely under alternative assumptions about the forms of land use and transportation.

Urban structure planning

1.29 Work on this sector started with preliminary studies of the shape and form of possible urban development on Teesside; its capacity to accommodate different levels of population; and the relationship between transportation and land use. The work culminated in the development of a simplified mathematical model (SYNTH) for simulating the likely traffic flows in an urban strategy from a very simple set of data, comprising the distribution of population, employment, car ownership and accessibility on Teesside in a system of 70 'coarse' zones.

1.30 Simultaneously, analyses and forecasts were being prepared of the future levels of population and employment on Teesside within the context of likely regional policy for the North East.

1.31 During the latter half of 1965, alternative strategies for the future development of Teesside were formulated for the coarse zone system and compared. This evaluation culminated, in January 1967, in the publication of a provisional urban plan. At a meeting of the Steering Committee in March 1967, it was resolved 'that while the reservations made by the individual members be noted, this (plan) be accepted as a basis for further detailed work on the understanding that the consultants would re-examine certain aspects of the plan in the light of comments made'. These comments and reservations referred, in particular, to the future of East Cleveland.

1.32 Work continued during the first half of 1967 on a more thorough examination of the provisional strategy, in the light of

a consultations with member organisations of the Steering Committee;

b the results of the analysis of the survey data;

c the local planning studies of key areas within the urban area.

1.33 This culminated in the preparation of a final land use policy and a probable road system by August 1967. The work included the preparation of a detailed set of predictions for a system of 211 'fine' zones about the likely distribution of population, employment, housing, personal income and retail sales within the selected land use proposals.

1.34 The next, and final, stage in urban structure planning was the exploration of alternative transportation policies and the definition of a final set of recommendations for the road and public transport systems. This could start only when the range of alternative land use strategies has been narrowed to one and the detailed set of predictions made to describe that strategy. Mathematical models were then used to predict the amount of traffic which would be produced by the land use plan. We considered a number of different transportation systems to serve this traffic. This involved investigating the relative attractiveness of public and private transport in the future and the validity of restricting the use of private vehicles by measures such as parking charges or road pricing. The traffic was assigned to roads, bus routes and train services and the probable flow on roads and interchanges found together with figures of bus and train occupancy and values used in the economic assessment of the transport system.

Local planning studies

1.35 Local planning was carried on throughout the three years on those areas of Teesside where a more detailed understanding was necessary for the final definition of urban structure policy as a whole. These areas proved to be:

- a North Middlesbrough, including the central area and its adjacent housing areas, and the Ironmasters' District;
- b central Stockton;
- c central Redcar;
- d areas of new development south of Middlesbrough, Thornaby and Yarm;
- e housing rehabilitation at Stockton and Middlesbrough;
- f the alignment of key sections in the road system;
- g urban and rural landscape studies, including proposals for country parks.

1.36 The work on local planning was protracted because of the necessity to define the final urban structure policy before many of the details of the local plans could be settled.

Organization of the report

1.37 The report is in two volumes, following the pattern likely to be required for planning reports in the new legislation for development plans.

a Volume I is a non-technical account of the policies and recommendations by Teesside Survey & Plan. Following this Introduction (Part I), Volume I consists of two main parts; part II, which contains the argument leading up to the recommended urban structure policy; and part III which contains a series of separate reports on each of the local plans which we found necessary to prepare.

b Volume II is a series of technical reports on the methods and results of the surveys, analyses and forecasts.

Urban structure policy

1.38 Part II of Volume I opens in chapter 2 with a brief description of the regional setting of Teesside. The recent history of Government policy for Teesside is reviewed and the likely future role of Teesside within the North East Region is defined to the effect that Teesside will continue to be a growth area within the North East, its population growing both by natural increase and inward migration. The remainder of chapter 2 is devoted to forecasting the likely future size of the population and labour supply of Teesside and establishing what sort of employment policy would be required to sustain this growth in population.

1.39 Chapter 3 presents an appraisal of the planning problems of Teesside concentrating on forecasting the requirements of each sector of the urban structure and defining its weaknesses, and implications. The sectors include the natural environment and resources of Teesside; housing; personal income and expenditure; shopping; travel behaviour and the transport system; civil and institutional uses; recreation; and the distribution of employment.

1.40 The following chapter brings this appraisal to a conclusion by defining the nature of Teesside as a riverside belt of economic and commercial activity with residential areas on either side and, beyond them, the countryside and the National Park. After describing the structure in greater detail, its main problems are identified

as decay and the need for renewal; and the poor quality of much of the services and the road system. The opportunity for future development arises from the forecast growth in population and employment, the location of some of which has already been decided by current planning policy; the natural resources of the area; and the capacity of its existing urban structure to adapt to changing circumstances. Seven strategies are put forward as alternative methods of taking these opportunities for future development.

1.41 Chapter 5 is the key stage in the argument as it gives a definition of the specific planning objectives for Teesside. They are derived from the analysis in chapters 2, 3 and 4 and from a comparative analysis of the alternative land use strategies which shows that some form of relatively compact development is preferable to a dispersed, satellite or linear form, and an evaluation of alternative transportation policies which indicates that a system that gives a free choice between public and private transport is preferable. The final, crucial objectives for planning on Teesside are then set out as:

- a a diversified employment structure;
- b conservation and proper use of the key natural resources of land for heavy industry, the river Tees, water, and the countryside;
- c a compact urban form but, within this, a dispersal of activities and a relatively low overall density, the main accent for future development lying to the south-west and south of Teesside with secondary areas on the east and in the north-west;
- d a transport system designed for a high usage of the private car;
- e a well designed and varied stock of dwellings in attractive environments with good access, particularly to a regional centre for Teesside.

1.42 Chapter 6 contains a detailed list of the specific recommendations for urban structure policy and a description of the way in which each of the districts is likely to change. Middlesbrough, Eton, Stockton and Thornaby will be subject to much redevelopment as their older sections near the river are renewed and as new housing is built on the higher land away from the river. The majority of the completely new development, however, will be at Nuthorpe-Morton, south of Middlesbrough; south of Thornaby and Yarm, on both sides of the Lazen Valley; west of Waindston; and on the coast at Redcar and Marske. Special attention is given to the problems of East Cleveland, in which it is recommended that an attempt should be made to attract new employment into the area but that its population should grow only slightly.

1.43 It is shown, in chapter 7, that the likely capital cost of the recommended policy will be of the order of £1,000 million, a figure that is essential if population is to grow to 700,000 by 1981. The remainder of the chapter describes the future work that will have to be carried out by the responsible authorities for the planning of Teesside. This includes ten-year planning forecasts, the preparation of more detailed local plans, and the regular review of urban structure policy itself. The chapter, and the part of the report devoted to urban structure policy, concludes by stressing the essential need for continued co-operation by the three responsible local planning authorities for the effective planning of Teesside.

Local planning

1.44 Part III of Volume I comprises a series of chapters devoted to separate, local planning issues. The criterion

for their selection was that each draft with problems arising directly from the urban structure policy. Some are feasibility studies to show that aspects of the urban structure policy would be capable of implementation when examined in the greater detail of a local plan. This applies particularly to areas where change and development are likely to be most far reaching, in the central areas of Middlesbrough, Stockton and Redcar and their immediate vicinity, including the Teesmead District at Middlesbrough. It applies too at Levenside and South Middlesbrough which are the recommended locations for much of the new development. Finally it applies to the more detailed studies made of certain crucial road alignments.

1.45 The remaining issues are selected to illustrate certain principles suggested in the urban structure policy. Policy for the rehabilitation and redevelopment of older housing areas is illustrated by action area plans for Peckfield at Stockton and Southfield at Middlesbrough. Proposals for country parks are illustrated by case studies for those recommended for Billingham Beck, the lower Lowen Valley, and a forest park on the moors above Great Ayton. And policies for the improvement of the urban environment are illustrated by case studies of the landscape treatment of an industrial area at Billingham and part of the primary road system; advance tree planting in an area for urban development at Ingley Barwick; and the temporary landscape treatment of closed sites.

Analysis

1.46 Volume II contains a series of detailed, technical accounts describing the surveys and methods of analysis used in the work. They fall into five main parts.

a Population and employment: the methods of measuring, classifying and forecasting the population and employment and for measuring, analysing and predicting the geographical distribution of employment.

b Housing: the methods of surveying the quality of the existing housing stock of Teesside and forecasting the future demand for new houses; the definition of a phased programme for house-building; housing standards and the availability of land for residential purposes.

c Income, expenditure and shopping: methods of

forecasting the size and distribution of personal income and expenditure; a classification and analysis of the shopping pattern on Teesside; and the formulation and evaluation of a shopping policy.

d Transportation: methods of forecasting vehicle ownership; description of the present transport situation; detailed account of mathematical models used in, and the results of, the forecasts of future traffic on Teesside; the definition and evaluation of transport policy.

e Landscape and recreation: a description and analysis of the regional landscape of Teesside; its natural resources and liability to atmospheric pollution; and a survey of recreation and leisure.

Definitions and references

1.47 The surveys and analyses were made and the report has been written in terms of the local government situation as it was in 1966. Only occasional and specific reference is made to the situation with the new Teesside County Borough Council in office, mainly in chapter 7.

1.48 'Teesside' is used throughout both volumes of the report to refer to the Teesside Survey Area whose boundaries are shown on figure 1.1. If the term is used in any other sense, an explanation is given at that time.

1.49 '1966' is used throughout Volume I to refer to the situation at the time of survey. In fact, surveys were made at a variety of dates between September 1966 and October 1966: the correct date for any particular issue is given in the relevant section of Volume II.

1.50 Prices and money values are expressed in Volume I, as '1966 prices'; this refers to the value of the retail price index in December 1965.

1.51 '1991' is referred to as the year for which forecasts are made and urban structure policy defined. This is the actual year for which predictions were made but the errors and uncertainties of forecasting mean that we are describing a policy for the next quarter-century; too much should not be read into a precise date or an exact forecast quantity.

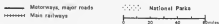
1.52 Only the most important references are given in Volume I, but references for each subject are given in Volume II. Similarly, Volume I contains no cross references to Volume II because to do so would make the text unnecessarily complicated.



Transporter Bridge, Middlesbrough



Figure 2.1 REGIONAL CONTEXT OF TEESIDE



2 Regional growth and policy

Summary

a Teesside is an area of 360 square miles at the mouth of the river Tees, its population in 1966 was 479,000 and its economy is dominated by heavy industries: chemicals, steel and engineering. In geographic location, physical appearance, social relationships and economy, Teesside is set apart from the rest of north-east England.

b Regional policy has evolved over the years, recent landmarks including the North East White Paper (1963); the Northern Economic Planning Council's report, Challenge of the Changing North (1966); and Government reaction to this latter report (1967). Basic policy for Teesside is taken to be that it shall be a growth area within the North East. That is, its economy is expected to develop so as to support growth in population by natural increase and inward migration.

c Following this basic assumption, it is forecast that:
(i) population will grow to about 704,000 by 1991, including a natural increase of 163,000, and growth from migration of 52,000;

(ii) the number of people seeking work will rise to about 321,000; an increase of 60,000 males and 43,000 females; this would result from higher activity rates for females; and an increase in travel-to-work into Teesside;

(iii) employment in existing industries on Teesside could fall slightly to about 91,000 because of rising productivity and rationalisation in the heavy industries;

(iv) if population grows then employment in the services sector is likely to rise by at least 67,000 to 164,000, providing jobs for most of the additional females who will be seeking work;

(v) a gap of 61,000 jobs would then remain unfilled, the difference between the forecast labour supply and the future growth in employment that can be relied upon;

(vi) if the Teesside employment structure is to be diversified, to give a wider range of opportunities and to attract migrants, then most of this gap should be filled by the provision of industrial estates for 53,000 workers, mainly men (some of this land is already provided); by the reclamation and development of Seal Sands for heavy industry; and by the selection of Teesside for the reception of overflow of central Government offices, and as the site for a university.

Teesside in its regional setting

2.1 Teesside is an area of 360 square miles situated on either side of the estuary of the river Tees, and extending upstream for a distance of about seventeen miles in a direct line from the sea. There is still an extensive area of mud flats and marshes at the mouth of the river

although most of the marshes have been reclaimed for heavy industries. Teesside north of the river gently rises through a series of plateaux to a height of nearly 400 feet above sea level near Sedgefield. This north bank is drained by Billingham Beck and its tributaries. Teesside south of the Tees is also drained by a single river system, the Leven and its tributaries. But the Leven is a much larger river than Billingham Beck and its valley forms a wide plain lying between the gentle 200 feet ridge overlooking the lower Tees estuary and the steep scarp face of the Cleveland Hills rising abruptly in places to 1,500 feet.

2.2 South and east of the Tees estuary lies the district of Cleveland. It has a very broken topography with plateaux at different levels being separated by steep escarpments and valleys. The district is a northern extension to the main mass of the North York Moors, overlooking the Tees estuary from a height of 800 feet at Eton Moor and meeting the North Sea in a line of 200 feet cliffs east of Saltburn.

2.3 Along the river Tees lie the six towns that make up the core of Teesside (see table 2.1). In addition, about

Table 2.1. Population, 1966

Billingham	35,000
Stockton-on-Tees	83,000
Thornaby-on-Tees	23,000
Middlesbrough	156,000
Eton	40,000
Railton	36,000

Note: It should be noted that for clarity figures in this and subsequent tables are rounded, e.g. to the nearest 1,000 for population. Therefore where totals are shown they will not always appear to be correct.

50,000 live in the small towns and villages of Cleveland; 21,000 in the suburban villages south of Middlesbrough; and a further 35,000 in the rural areas around Teesside and in the small part of the Durham coalfield within the survey area. This brings the total population of Teesside to about 479,000 in 1966.

2.4 Teesside contains 14 per cent of the population of the Northern Region. The only towns close to Teesside are Hartlepool, on the northeast, a town of about 90,000; and Darlington, to the west, with a population of about 83,000 (see figure 2.1). Hartlepool is five miles, Darlington ten miles, from the nearest urban parts of Teesside. To the south lie the North York Moors and the farmlands of the North Riding in which the largest towns nearest to Teesside are Northallerton, 8,000 and Whitby, 12,000. Whitby is twenty-five and Northallerton eighteen miles from Teesside.

2.5 The first impression therefore is that Teesside is an urban area some distance from the other main centres of population in the Northern Region. Tyneside with its population of 820,000 lies thirty miles to the north;

and between Teesside and Tyneside lie Sunderland and the villages and small towns that make up the Durham coalfield.

2.6 The main road access to the North East is the A1 trunk road passing Darlington to Newcastle upon Tyne and thence to Scotland. Teesside lies ten miles east of this line and access from it is by the A66 trunk road from Darlington and the A177 from Durham. Alternative means of access is given by the A19 trunk road from Sunderland in the north and York in the south. A coast road A174 gives access from Whitby and Scarborough. The most important of these are the trunk roads: the north-south route, the A19; and the route from the west, the A66.

2.7 Teesside also lies off the main spine route for all communications through the North East. Instead a regular passenger service connects Teesside with the main north-south route at Darlington; a less important route from the south approaches Teesside from Northallerton and then follows the coast through Hartlepool and Sunderland to Newcastle upon Tyne. These are also the most important routes for goods traffic by rail together with the goods line northward to the Durham coalfield via Billingham. A liner train depot is under construction at Stockton.

2.8 The river Tees is navigable to ocean going vessels and is lined below Stockton by wharves serving the main industries of the area and by general cargo ports. The original harbour at Middlesbrough is gradually being replaced by Tseepart, the docks under construction downstream on the south bank of the Tees. The new docks being built by the Tees and Hartlepool Port Authority can accommodate ships of 65,000 tons with the possibility of further growth in the future.

2.9 An airport is operated by a group of local authorities at Middleton St. George, between Stockton and Darlington. This is a comparatively new venture but it is capable of taking full international services.

2.10 The economy of Teesside that has developed in the past century has remained remarkably consistent in its basic characteristics. The main industrial development started with the discovery and exploitation of the iron ore reserves of the Cleveland Hills. These were smelted in furnaces, at first mainly on the banks of the river Tees at Middlesbrough, using Durham coking coals. Later the river Tees and this iron industry were used as the basis for shipbuilding and heavy engineering. Then, in the 1920's, the synthetic essence of the area were used to support a heavy chemicals industry which, after World War II, extended from its original base in the manufacture of fertilisers to heavy organic chemicals using by-products of the first processes and imported oil. By this time too the iron and steel industry had become dependent on imported iron ores.

2.11 The main characteristic of the economy of Teesside in 1966 was that it depended on a very narrow range of heavy industries: chemicals, iron and steel, heavy engineering and shipbuilding. These industries employed 40 per cent of the total employment in Teesside and other manufacturing activities were relatively unimportant, most of the remaining jobs being in the service industries (see table 2.2).

Table 2.2. Employment by Teesport Industrial Group, 1966

1	Chemicals	21,100
2	Metals	30,800
3	Engineering and Shipbuilding	15,200
4	Manufactures Manufacturing	11,300
5-9	Services, Agriculture and Mining	106,800
TOTAL (rounded)		183,200

2.12 Another characteristic of this economy was its dominance by comparatively few firms: ICI Ltd.; the British Steel Corporation (replacing Dorman, Long & Co. Ltd.); South Durham Steel & Iron Co. Ltd.; and Slingsby Iron & Steel Co. Ltd.; and Head Wigham & Co. Ltd.; these firms employ 60,000 or one-third of the workers on Teesside.

2.13 The third characteristic is the degree to which the heavy industries and the port rely on overseas sources of raw materials and markets for their products, and the use made by the heavy industries of the river Tees. The total trade passing through the river in 1964-65 was about 8,000,000 tons per annum of which 7,500,000 were imports, 2,200,000 exports. Of this total trade 84 per cent (by tonnage) was for chemicals, iron and steel, shipbuilding and heavy engineering, and 78 per cent was with overseas countries.

2.14 This description of the Teesside economy can be extended by considering in very approximate terms the amount of employment in different sectors of manufacturing that can be attributed to the various markets for their products. This shows that the most important markets lie to the south in the West Riding, Lancashire, the Midlands and the South East (see table 2.3 and figure 2.2).

Table 2.3. Percentage of manufacturing employment, 1966

	Local	North	South	Export	Total
Heavy Industry	9	12	48	17	66
Other manufacturing	4	2	8	0	14
TOTAL	13	14	56	17	100

Notes: Local: Teesside, Hartlepool and Darlington
North: remainder of U.K. north of Teesside and Darlington
South: remainder of U.K. south of Teesside and Darlington
Export: direct export via river Tees.



Figure 2.2 ECONOMIC PLANNING REGIONS OF GREAT BRITAIN

2.15 The importance of commercial and social linkages between Teesside and the outside world is more difficult to assess. Some indications can be derived from an examination of the pattern and volume of daily travel on Teesside in 1968. The weekday average number of person-trips made within, to, or from, Teesside was nearly 800,000 of which about 13 per cent were to, or from, places outside Teesside. This was true whatever the purpose of the trip (see table 2.4).

Table 2.4. Weekday average number of person-trips crossing boundary, 1968

purpose	total number of trips	% of all trips
home-to-work	33,700	13.2
business	26,400	16.7
home-to-shop	12,000	14.4
home-to-leisure	32,700	11.2
home-to-other	3,200	8.5
TOTAL	108,300	13.2

2.16 Between a third and a half of these trips are made to, or from, Hartlepool and Darlington and the majority of the remainder are made to, or from, places lying north of Teesside in the remainder of north-east England though there are differences in the pattern of travel for the various purposes (see table 2.5).

Table 2.5. Distribution of weekday average number of person-trips crossing boundary, 1968

	home-to-work	business	home-to-shop	home-to-leisure	home-to-other	total
Hartlepool	26	16	15	15	18	18
Darlington	29	21	20	22	22	28
North	32	38	26	25	28	31
South	14	26	27	40	22	28
TOTAL (%)	100	100	100	100	100	100

2.17 The most important single purpose for which trips are made across the boundary of Teesside is the journey to work. About 13,000 people living in Hartlepool, Darlington and other parts of the North East work each day on Teesside; and 4,000 people living on Teesside work outside the area.

2.18 A large proportion of the business trips are made with the North, especially Newcastle, being mainly concerned with the distributive trades and administration rather than industry. The pattern of shopping journeys, however, is quite different, mainly because the number of inward journeys is virtually equal to the number of outward journeys; and the journeys are made mainly to, and from, places that are reasonably close to Teesside. People travel to shop on Teesside from places such as Hartlepool, Whitby and Northallerton, and residents of the western and north-western parts of Teesside occasionally travel to shop at Darlington. There is only a minute amount of travel to shop at more distant centres such as Newcastle, York or Leeds.

2.19 The predominant direction of travel for leisure purposes is that by residents of Teesside to the North York Moors though there is a certain amount of travel from Darlington, Hartlepool and the Durham confield to Teesside.

2.20 The conclusion to be drawn from this brief account of the regional setting, economic linkages and social relationships of Teesside is clear. To a marked degree the economy of Teesside is highly distinctive with little dependence on the rest of North East England except for the supply of coal for its heavy industries. In its social relationships too Teesside is relatively self-

contained with comparatively few people making journeys to other parts of North East England whether they be for work, shopping or leisure. This is true particularly if Hartlepool and Darlington are regarded as part of a wider Teesside.

Regional policy for Teesside

Recent trends in the economy

2.21 Teesside was a Development Area from the end of the War until 1958 and again from 1963 to the present time. As such it has been Government policy to foster the growth of employment in the area. The method of control has been for the Board of Trade to grant Industrial Development Certificates for new development. The Certificate contains an estimate of the employment likely to be created by that development. Between 1948 and 1965, Teesside received 20 per cent of the employment expected to result from the granting of Certificates for development in the Northern Region even though it only contained 17 per cent of total employment in the Region in 1966. This higher than average rate of growth was mainly the result of the expansion of firms already based on Teesside as the area received only 13 per cent of the Region's anticipated growth in employment in new factories or the expansion of firms new to the area since 1948.

2.22 Most of this growth was the consequence of the activities of ICI in setting up their Wilton works on the south bank of the Tees. This works employed 13,000 workers in 1966 (apart from contractors' employees) but its period of rapid growth in employment had come to an end by about 1961 and since that time, although deliveries have nearly doubled, employment has increased only by 10 per cent. It was this expansion that was probably the main underlying reason for the reversal of the long-term trend since World War II for a slight annual loss of population by migration. Instead there was a steady gain in population by migration amounting in all to about 11,000 people during the period 1960-62. The total employment in firms new to Teesside since the War was only about 5,000 by 1968, a very low figure which would have been quite unable to have sustained an inward migration of population.

2.23 By 1963 the national economic recession affected the economy of the North East to a degree where, for instance, male unemployment rates were 6.8 per cent for the year, and the average rate for Teesside was 8.8 per cent. These high rates on Teesside were to some extent a consequence of the general economic recession but more specifically the result of a sharp fall in employment in the steel industry in the early 1960's; a more gradual but persistent fall in employment in heavy engineering and shipbuilding; and a stabilisation of employment in chemicals. In other words technical changes in the heavy industries combined with economic recession produced the relatively high rates of male unemployment on Teesside. It is interesting to note that the fall in employment was confined to male jobs in heavy industry. Employment in other manufactures and in services and female employment continued to rise slowly but steadily.

The North East White Paper

2.24 The publication of the White Paper *The North East: A Programme for Regional Development and Growth* (Cmd. 2206) in November 1968 marked a further stage in the definition of regional policy. The report stated that the main aim of policy was to diversify

the region's economic life by the development of a wider range of enterprises. Measures in the social field, in particular the modernisation of the general environment, would be the necessary complement and these would lie within the power of Government to initiate by a deliberate increase in public investment directed mainly to the part of the region best fitted to support rapid economic growth, the so-called growth zone between Tyne and Tees east of the A1. The report showed that the biggest concentrations of factors favourable to rapid growth were to be found at Teesside, Teesside, and Darlington-Aycliffe which therefore were to be the main centres of expansion. The report suggested that the population of Teesside and Hartlepool could rise even allowing for some migration out of the region. The extra land required for industry and housing seemed likely to be available in or close to the conurbation and it was expected that there might be an increased amount of commuting to Teesside from residential areas in Cleveland.

2.25 This general policy for Teesside was supplemented by several specific proposals including:

- a the development of a new industrial estate of some 300 acres on the south side of the conurbation to act as a focus for much of its further industrial growth;

- b the current road programme for schemes already in progress or planned for the North East at the time was £50 million. The Government decided that this should be augmented by a further £50 million so that expenditure for 1954-59 should rise from £54 to £55 million. Specifically this should include for Teesside:

- (i) improvement to the links between Darlington and Teesside;

- (ii) a South Teesside Parkway with connection to Teesport;

- (iii) realignment of the present A19 north-south route through Stockton to a new route probably crossing the Tees between Stockton and Middlesbrough;

- (iv) a radical improvement of the A15-A169 route south of Teesside to its connection with the A1 at Darlington;

- (v) extension of the A19 improvement north of Teesside to Sunderland;

- c local authorities were invited to consider arrangements for the civil development of the R.A.F. airfield at Middleton St. George, due to go off the active list in 1965;

- d endorsement of the report of the Rochdale Committee of Inquiry into the Major Ports of Great Britain, that any substantial new port development in the Region should be on the Tees and be given priority;

- e the promotion at Middlesbrough of central development to act as a social and commercial focus for the whole conurbation;

- f an accelerated programme of house building mainly under the local authority sector;

- g encouragement of action to reduce atmospheric pollution and the pollution of the river Tees.

Challenge of the Changing North

2.26 Later the Northern Economic Planning Council prepared a report on the Northern Region, *Challenge of the Changing North* (H.M.S.O. 1968). This report laid great stress on the need for technological change. Its policy was based on the proposition that in the period up to 1971 emigration from the region would be reduced and that by 1982 the economy would be capable of sustaining the full annual natural increase in the Region's population.

2.27 The Council's policy was that Teesside would increase its population both absolutely and in relation to other sub-regions. They recognised that Teesside may well be the only sub-region to do this but they noted that over the past fifteen years or so Teesside had been alone in experiencing a favourable balance of migration. Part and industrial developments all point to an accelerating rate of growth. Accordingly they forecast that the population of Teesside (including Hartlepool) might rise from 556,500 in mid-1964 to about 725,500 in mid-1981. This forecast included a net gain by inward migration of 28,000 in addition to natural increase. A major feature of their specific proposals for Teesside was that a technological university should be established as a matter of urgency.

2.28 The Council gave emphasis to their opinion on Teesside by suggesting that the Government should consider Teesside as a national, not merely a regional, growth area because of its many advantages: ample level land capable of development; capacity for considerable port development; proximity to the North York Moors National Park; a commercially strategic position; and good lines of communication to the south by road, rail and air.

2.29 The views of the Government on *Challenge of the Changing North* were made known in a letter from the First Secretary of State to the Chairman of the Northern Economic Planning Council in September 1967. The Secretary said that the wish of the Council to see a major reduction in the rate of net outward migration is well-appreciated and indeed shared by the Government though he drew attention to the difficulty of achieving this. The Government too 'are in broad agreement with the Council in its analysis of the industrial problems of the Region and fully accept the view that there is no room for any relaxation of the Government efforts to encourage the expansion of industry and commerce in the Region and to bring in new enterprises'. Turning to Teesside, the Secretary wrote that 'the Government feel that, although they welcome the interest which the Council is displaying in the development of (the area) it must await the report of the central study of possible long term distribution of population' which Government is making, but 'no change in the status of (Teesside) would be made without careful consideration and on the basis of evidence of long-term trends of development in the Region'.

2.30 The Secretary of State then referred to a number of specific decisions that bear on regional policy for Teesside. They include:

- a the Region needs an adequate supply of less capital-intensive industries which can give employment to its major labour reserves;

- b the Region's infrastructure is in serious need of modernisation, and it is in the national interest as well as that of the Region, to modernise as rapidly as possible;

- c there is no chance of launching a new major university on Teesside in the years immediately ahead; the plan must be deferred against a period some years hence when it should be possible to consider the case for further new institutions in higher education or research;

- d extensions are to be built to the existing Government training centre at Billingham;

- e the Government will continue to encourage tree planting in suitable areas;

- f the Government will continue in their policy for the dispersal of government offices to give priority to the Development Areas;

- g the resources available for the road programme are

necessarily limited and there is bound to be an inevitable gap between what should and what can be done. The same selection criteria will be applied to proposed road schemes in the Northern Region as for schemes in other Regions and there is no question of penalising the Northern Region for priority they have enjoyed in the past;

h the Government finds that the desirable aim of housing policy set out by the Council of 23,000 new dwellings a year by 1970 is an acceptable basis for planning. This compared with a rate of 20,400 new dwellings in 1965.

Regional aims for Teesside

2.31 From these various official pronouncements, it is concluded that the aim of regional policy for Teesside will be for its population to be encouraged to grow by its full natural increase together with the amount of net inward migration assumed in the forecasts set out in Appendix 5 of *Challenge of the Changing North*. This will be accomplished by modernisation of the infrastructure of Teesside and by attraction to the area of the necessary amounts of employment to sustain the population. In particular, annual house building rates will be expected to increase sharply but the control of expenditure on proposed road schemes, other than those set out in the North East White Paper, is likely to be strict.

2.32 The recommended urban structure policy put forward in chapter 6 of this report and the employment policy at the conclusion of chapter 2 are therefore based in quantitative terms on the forecast of population growth contained in *Challenge of the Changing North*. It will be shown, however, that both the urban structure and the employment policies are desirable in their own right and do not depend on the Council's population policy for their validity. The policies should be implemented whether or not the population forecasts prove to be correct.

The population of Teesside

2.33 The population of Teesside in 1965 was 479,000. This represented an increase of 87,000 since 1951 of which 77,000 has been by natural increase, that is an excess of births over deaths; and 10,000 had been a net gain by migration into the area during the fifteen years. When making a forecast of the likely future population of Teesside it is necessary to consider separately these two causes of population change as they are fundamentally different in character. The factors entering the forecast of natural increase are the age and sex structure and marital status of the population and mortality and fertility rates. Any forecast of natural increase depends on assumptions about future trends in the behaviour of people as they affect these factors. For this reason a comparison has been made of the implications of several different sets of assumptions about growth by natural increase.

2.34 But the forecast of migration is a different kind of calculation. Migration depends among other things on the relative availability of jobs and wage levels and the quality of life, including the physical environment, on Teesside and in the areas from which migrants move. To some extent, these are capable of manipulation by planning policy to achieve a desired result. Therefore only a single forecast of migration has been used, that implied in *Challenge of the Changing North*.

Natural increase

2.35 The most striking characteristic of the population of Teesside is that it is significantly younger than that of England and Wales as a whole (see table 2.6). But

Table 2.6. Age distribution of population, 1965 (per cent)

	Teesside	England and Wales
0-14 years	28	23
15-64 years	61	62
65 years and over	12	15
TOTAL (rounded)	100	100

Note: actual age groups are 15-64, 65 and over for females; 15-64, 65 and over for males.

this difference is matched by the equally significant differences in mortality and fertility. Mortality rates (deaths per 1,000 people) on Teesside have been steadily falling during the last fifteen years though they have remained at a level about 10 per cent higher than those for England and Wales. By 1964 the rates were 12.8 per thousand for Teesside and 11.3 per thousand for England and Wales. The Registrar General expects the national rate to continue to fall and a parallel fall has been assumed in the Teesside rate.

2.36 Fertility rates (births per 1,000 women in an age group) for women aged 15-44 were about 16 per cent higher on Teesside than in England and Wales but the trend has been for the national rates to rise more rapidly than those on Teesside. The explanation for the higher rates, and the lessening differential, are probably to be found in the social characteristics of the population. For instance, about 14 per cent of the population of Teesside is Roman Catholic compared with 8 per cent in England and Wales; 38 per cent of the population of Teesside is in the two lowest social categories used in the 1961 Census compared with only 29 per cent nationally; and fertility rates in the lower social groups are about 30 per cent higher than those in the two highest categories of the population; and marriage rates on Teesside are higher than national. These factors overlap in their effects but they offer part of the explanation for the high fertility rates on Teesside.

2.37 The forecasts of future fertility rates on Teesside are based on assumptions about future rates for England and Wales; and about future differences between rates on Teesside and in England and Wales. The Registrar General's assumptions about future national rates used in his forecasts for England and Wales have varied in recent years. In his 1963 forecast he assumed that completed family size would not increase beyond that expected of people married in the late 1950's. But in his 1965 forecast he assumed that family size would continue to increase. This latter forecast gave the fastest rise in fertility rates as in his subsequent forecasts he has used slightly lower rates. Three assumptions cover the full spread of possibilities:

- A: rates rise more rapidly than the Registrar General assumed in his 1965 forecast;
- B: rates rise at the level assumed in the 1965 forecast;
- C: rates rise at the level of the 1963 forecast.

2.38 The difference between national and local rates is substantial but has been declining. There is very little possibility of the difference widening in future and two assumptions have been used:

- X: the difference continues at its 1961 proportions level;

Y: the gap is progressively reduced until Teesside and national rates are equal by 1991.

2.39 By taking pairs of assumptions as alternative forecasts of population change by natural increase are obtained (see table 2.7).

Table 2.3. Population forecasts, by natural increase ('000's)

	1976 total over 16 years	1991 total over 16 years	2011 total over 16 years
Teesside Population Area:			
AX	524 374	667 445	248 628
BX	871 374	658 632	811 815
CX	826 374	834 447	637 588
AY	524 374	690 445	827 883
BY	871 374	820 442	750 565
CY	816 374	808 439	746 547
England and Wales (1991 forecast):			
	81,452 28,365	97,762 42,825	net available
Natural Teesside Population Area in this and for demographic analysis:			
its population in 1991 is 1.6 per cent less than that for the Teesside Survey Area; the base year for projection for demographic reasons, is 1991. The figures were:			
	total	over 16 years	
Teesside	442	318	
England and Wales	46,802	25,205	

The most important characteristic of these forecasts are:

a total population growth to 1976 is the same for total population and the adult population aged over 16 years, i.e. 20 per cent. But total population in England and Wales would grow by 13 per cent and adult population only by 9 per cent. This has important implications for labour supply on Teesside:

b total population forecast for 1991 varies considerably implying growth of between 36 per cent and 50 per cent excluding the effects of migration. Under all assumptions, the rate is faster than that forecast nationally at 26 per cent;

c nearly three-quarters of the difference between the highest and lowest forecasts is in the population aged under 16 years;

d the numbers of people of working age and over the age of retirement are roughly the same in each of the alternative forecasts to 1991. Whatever the base assumptions, if the population of Teesside were to grow by natural increase alone, the numbers of people of working age would rise by between 38 per cent and 50 per cent to a figure between 360,000 and 376,000; and those of retirement age by 58 per cent to 80,500. Both these rates are much faster than the comparable rates for England and Wales, at 18 per cent and 30 per cent respectively;

e each of the six forecasts shows that up to 1991 the age structure of the population is changing so as to increase the proportion of people under 16 and over 65 years. The proportion of the population of working age is falling continuously though the rate of decline is likely to slacken during the 1980's. But after 1991, the proportion of population which is of working age might start to rise;

f demographic forecasts beyond 1991 are quite unreliable as guides for planning policy. Even if no allowance is made for gains or losses by migration, the population forecast for 2011 could lie between three-quarters of a million and one million people.

2.40 Three main conclusions can be drawn from this forecast. The first is that Teesside could expect for demographic reasons a much more rapid rate of growth in population than in England and Wales; and unlike

England and Wales its population increase would be nearly matched by the increase in the population of working age. Second, the rate of increase in the adult population in the period up to 1991 is sufficiently similar under different assumptions for a reasonably reliable forecast to be made of its size. In these circumstances the main variable in forecasting the total size of the adult population will be the migration component. Third, it is not possible to give a reliable forecast of population increase beyond the turn of the century even assuming nil migration.

Migration

2.41 Between 1961 and 1966 Teesside gained 10,000 people by direct migration but it is probable that the total gains matched a cyclical fluctuation whereby there was a considerable rate of inward migration between 1968 and 1982 during the period when the development and opening of the ICI works at Wilton was at its peak and before the sharp fall in employment in the steel industry in 1982-83. The recent levels of migration are shown in table 2.8 together with the forecasts of

Table 2.8. Average net migration, Teesside (persons per annum)

1951-64	= 308
1954-61	+ 308
1965-82	+4,800
1982-85	= 700
1986-91	+1,600
1971-81	+1,580
1981-91	+1,600

net gains by migration between 1985 and 1991, those used in *Challenge of the Changing North*. It has been assumed that the fall gain for Teesside and Hartlepool would be absorbed entirely by Teesside because of its attractions and location and that this rate could be encouraged to continue at the same rate beyond 1991. The migrant population is assumed to have roughly the same age-sex structure as that occurring in 1980-81 reported in the Census of Population. The final forecast of the effect of migration is given in table 2.9.

Table 2.9. Migration in Teesside, 1981-91

	migration	netural increase of migrants	total effect of migration
1981-86	2,500	300	2,800
1986-91	18,400	3,100	21,500
1976-91	27,900	10,900	37,800
TOTAL	47,900	14,300	62,200

Final forecast of population

2.42 The final forecast of population is obtained by adding those for natural increase and migration. Although the total population forecast could vary, twenty-five years is too short a period for there to be a substantial variation in the likely growth by natural increase of the adult population which will lie between 430,000 and 465,000 by 1991, a comparatively narrow range of 16,000. This is vital for urban structure policy as it means that a single figure forecast of the population will be reliable in its implications for labour supply, household formation and car ownership. It will be less reliable only in its implications for education policy.

2.43 But during the last fifteen years there have been considerable variations in the annual level of migration. To that extent, the forecast of the adult migrant population amounting to 48,000 by 1991 is not only greater

than the widest variation in the natural increase forecast, but is also much less statistically reliable in the sense that future migration is dependent in part on the degree of economic growth on Teesside and Government policy for regional development rather than demographic factors.

2.44 The final forecast of population for the Teesside Survey Area is given in table 2.10. It has been made by

Table 2.10. Population forecast, Teesside Survey Area

	'000's			%		
	1958	1976	1991	1958	1976	1991
0-14 years	133	199	206	26	26	28
15-64 years	250	332	414	51	59	59
65 years and over	66	67	64	12	12	12
TOTAL (rounded)	470	598	704	100	100	100

Note: actual age groups are 15-69, 65 and over for females, 15-64, 65 and over for males.

assuming a rate of natural increase corresponding to forecast AY in table 2.7 for the Teesside Population Area; expanding this by 1.8 per cent to give an estimate for the Survey Area; and adding to the result the assumed forecast of migration.

2.45 This forecast is slightly lower than that used in *Challenges of the Changing North* which corresponds more closely with the fastest rate of natural increase (assumption AX) when allowance is made for Haslepool. But the difference is less than 3 per cent and lies entirely in the assumed rate of natural increase, the migration element being common to both forecasts.

Labour supply on Teesside

2.46 The supply of labour on Teesside comprises, first, the resident population which is actually seeking work of more than ten hours weekly including those registered for work but unemployed; and, second, the net gain by daily travel-to-work from areas outside Teesside. Forecasts of the supply of labour in 1976 and 1991, and an estimate of the figure for 1958, are complicated by the considerable fluctuations induced by short-term cyclical movements in the economy. Thus employment on Teesside reached peaks in 1958, 1961 and 1966 but was at a low level in 1959, 1963 and 1967. The data on employment from the Ministry of Labour and from the employment surveys actually refers to mid-1966, at a time when the effects of the 1963 recession were still being felt and employment was at a relatively low level. The forecasts in this report are based on the trend in the level of activity rates at the high point of the short-term cycle, and take 1961 as their base year.

Activity rates

2.47 The key to a forecast of labour supply is the assumptions made about future activity rates; that is the proportion of population in a specific age-sex group that is seeking employment. These rates are then applied to the forecast of the age-sex structure of the total population to give the estimated supply of labour. The Ministry of Labour has prepared long term forecasts of the likely activity rates for Great Britain. These Ministry assumptions can be accepted but further assumptions must be made about the relationship between national and Teesside rates. These regional differences are assumed to have disappeared by about 1991 as patterns

of life in different parts of the country continue to draw closer together.

2.48 Male activity rates present few problems. Teesside rates are currently higher than those for England and Wales; for instance, the level of activity in 1961 was 88.9 per cent in Teesside compared with 86.2 per cent in England and Wales for the population aged over 15 years. The Ministry of Labour forecasts assume that activity rates in the age group 25-64 will remain constant but that rates in the 15-24 age group will fall sharply as the school leaving age is raised and as opportunities for full-time higher education are extended. But the fall in average male activity rates is still likely to be relatively slow (see table 2.11).

Table 2.11. Teesside male activity rates, population aged fifteen and over (per cent)

1960	88.9
1976	84.7
1991	81.1

Note: the 1991 rate is extrapolated from the trend forecast; the actual rate was lower because of cyclical fluctuations.

2.49 Female activity rates present greater problems of analysis mainly because there is a much greater disparity between Teesside rates and those for England and Wales (see table 2.12). The low rates on Teesside are

Table 2.12. Female activity rates, population aged fifteen and over (per cent)

	Teesside	England and Wales
1961	26.8	34.8
1961	31.4	37.7

thrown into even more striking relief if compared with the rates in the main conurbations. Even those with lowest rates in 1961, Tyneside 35.2 per cent and Merseyside 39.9 per cent, are substantially higher.

2.50 The traditional view is that the present low rates are a consequence of the few opportunities for women to work in an area where the main industries are steel, shipbuilding, heavy engineering and chemicals; where shift working by men is prevalent; and where local tradition and the high birth rate may also be contributory factors. On the other hand employers seeking female labour have in the last four years found difficulty in recruiting sufficient workers. Part of the explanation is that the growth in service employment has been particularly rapid and consistent since 1958. It may have temporarily exhausted the available supply of female labour by 1968.

2.51 But the apparent shortage of workers may arise from the slow assimilation of a new attitude by women to the prospect of going out to work in any of the service industries or light manufacturing industries which are the main types of opportunity for women. This is affected by ease of accessibility to work and the provision of suitable facilities. For instance, activity rates tend to be higher in local authority housing estates particularly those with a greater local supply of jobs and with good bus services. Surveys have shown too that a lack of nursery schools may deter some women from going out to work.

2.52 The Ministry of Labour has forecast a continued rise in the average activity rates for women aged fifteen and over in Great Britain, especially for married women. Average rates on Teesside have been assumed to rise at an even faster rate until the Teesside rates are the same as those for England and Wales by 1991. This would be consistent with the trend towards a greater

similarity between patterns of behaviour on Teesside and in England and Wales, a trend that is both a prior condition for, and a consequence of attracting inward migration to Teesside. The rates are likely to rise as shown in table 2.13.

Table 2.13. Teesside female activity rates, population aged fifteen and over (per cent)

	1980	1981
1980	34.2	
1976	28.1	
1971	45.4	

Forecast of resident labour supply

2.53 The final forecast of labour supply is given in table 2.14. The forecast is based on the final population

Table 2.14. Teesside labour supply ('000's)

	males	females	total
1980	142	80	220
1976	167	77	244
1968	302	102	404

Notes: the 1968 figure is based on the extrapolated activity rate, in consequence this gives a figure which is fully compatible with the 1970 and 1981 forecasts, but is higher than the actual labour supply in 1968.

forecast of 704,000 by 1991. The likely variation in this forecast arising from the alternative demographic assumptions about future fertility rates is of the order of 2 per cent. But a large component of the increase in labour supply is made up of migrants and their natural increase. The total increase of 53,000 in the male labour force includes about 24,000 migrants; and about 6,000 of the increase of 42,000 in female labour supply are also migrants. This is the major source of possible variation in the forecasts of labour supply. The assumptions about activity rates could also be the cause of variation in the forecasts. However, the male activity rates are probably the lowest likely, and the female rates the highest likely, given the assumptions.

Travel-to-work

2.54 A forecast of the possible future levels of travel-to-work for 1991 has been prepared in the light of the regional distribution of future population set out in *Challenges of the Cheshire North* and the possible distribution of employment associated with this forecast. It suggests that total net travel-to-work to Teesside is likely to increase because of the size and economic character of Teesside relative to the rest of the North East as the following forecasts show.

Table 2.55. Weekly travel-to-work to Teesside, 1980 (persons)

	1976	1981
gross inward travel from outward travel	12,710 4,160	21,700 4,700
net inward travel	8,550	17,000

2.55 A substantial relative increase has been assumed in the net daily travel-to-work from the Durham-coastfield. This is a likely response to the relative rates of economic growth in the coastfield and on Teesside. Only a small increase in the net travel from Hartlepool is forecast mainly because of the economic development that is expected on the north side of the Tyne estuary outside the survey area.

Final forecast of labour supply

2.56 The forecasts of the resident labour supply and of a possible increase in daily travel-to-work can be brought together to give an indication of the likely number of people for whom jobs will have to be found in 1991 if the population target of 704,000 is to be sustained. It represents an increase of about 73,000 jobs for males and 48,000 jobs for females (see table 2.14). It must be

Table 2.56. Forecast of labour supply, Teesside, 1991 ('000's)

	male	female	total
resident labour supply	182	102	284
net travel-to-work	15	2	17
TOTAL	217	104	321

understood however that these figures are of use only as an indication of the necessary scale of growth. A considerable variation in the increase in the number of jobs would be possible before any effects may be felt in the actual level of population. Thus activity rates could change very slightly, or the net amount of daily travel could alter, before any effect might be felt in the forecast net gain of population by migration.

The employment structure of Teesside

2.57 The forecast of the future level and structure of employment must be based on a comparison between two sides of an equation. One side is the likely supply of labour which will be seeking employment: this was described in the previous section. The other side is the demand for labour arising from changes in the existing firms and industries of Teesside; and that arising from the need to provide services for the increase in population and increased levels of personal income. These two sources of increased demand for labour are described as the autonomous growth in employment.

2.58 The difference between the forecast supply of labour and the autonomous growth in employment represents an employment gap that will have to be filled by attracting new firms and industries to Teesside if the forecast growth in population is to be achieved.

The classification of employment

2.59 The current employment structure of Teesside is shown in table 2.17. The Standard Industrial Classification has been reorganised into a series of Teesside Industrial Groups that more succinctly describe this structure. The original Ministry of Labour statistics were amended to give a full description of employment on Teesside by including estimates of civil servants, self-employed and others, and excluding unemployed workers.

2.60 The main characteristic of this structure is its domination by the first three industrial groups. In addition the first two groups are dominated by a single firm: JCI Ltd. and the British Steel Corporation. Each group contains a relatively high proportion of white collar workers in administration and research but employs a very low ratio of female workers.

2.61 The steel and chemical industries first developed on reclaimed land alongside the navigable river Tyne, using locally available resources of iron ore, salt and anhydrite, and easily accessible resources of coal. Today these industries rely more strongly on imported raw materials. They, together with heavy engineering and

Table 2.17. Employment on Teesside, 1988 ('000's)

Teesside Industrial Groups	male	female	total	% of total	
				female	white collar
1. Chemicals	29.8	3.3	33.1	9.8	27.8
2. Metals	28.1	1.8	29.9	4.8	20.0
3. Engineering and Shipbuilding	18.5	1.2	19.7	6.2	20.6
4. Other Manufacturers	9.8	6.4	16.2	46.7	17.8
5. Retailing	6.2	13.4	19.6	68.9	66.8
6. Other Commercial Services	11.0	9.9	20.9	47.6	56.4
7. Non-Personal Services	32.2	5.2	37.4	13.9	27.1
8. Health and Education	4.1	12.7	16.8	75.5	74.1
9. Agriculture and Extractives	4.0	0.5	4.5	10.0	40.5
Sub-totals, TIG's 1-4	82.2	14.4	96.6	14.9	22.4
5-9	59.5	41.3	100.8	41.3	52.7
TOTAL (rounded)	141.8	55.7	197.5	38.2	57.8

Source: adjusted Ministry of Labour returns (see paragraph 2.88).

Note: Teesside Industrial Groups (TIG) are modifications of the Standard Industrial Classification, 1988, roughly as follows:

- TIG 1 includes most of SIC IV
 2 = most of SIC V
 3 = parts of SIC VI and VII
 4 = SIC III, VIII-XVI and part of IV-VII
 5 = parts of SIC XX
 6 = parts of SIC XXX-XXXV (finance, professions and government)
 7 = SIC XVII-XXI, parts of XX (construction, utilities, transport and wholesale distribution)
 8 = parts of SIC XXXI
 9 = SIC I, II

shipbuilding, are virtually the sole users of the river for the import of raw materials and exports through Teesport and their own riverside wharves, and for launching and ship repairing. These industries are also the main users of rail sidings and the transport of materials by rail, such as coal from Durham colliery. Such economic linkages as exist between different manufacturing firms or more usually between different establishments of the same firm on Teesside lie wholly within these three industrial groups. Finally, although they employ nearly 80,000 workers, the industries are capital intensive with strict locational requirements tying them to the riverside. Densities on existing works are relatively high, averaging between thirty and forty persons per acre, but the trend is for a substantial fall in densities. For instance, four persons per acre have been quoted by one firm that may come to Teesside.

2.62 These three groups may therefore be described as site oriented industries. They require large areas of suitable land, a riverside location and good rail communications. In this they are strongly contrasted with the locational requirements of the other manufacturing industries on Teesside.

2.63 Teesside Industrial Group 4, Other Manufacturers, includes a very mixed batch of industries, none employing more than a few thousand workers. A large proportion of them have been brought to Teesside in the last thirty years, mainly as a consequence of different planning policy. These make negligible use of local materials, the port, or the railway system, and they have no links with the three heavy industries. They are most heavily oriented towards the West Riding, Midlands and the South East where their supplies and markets are located. Indeed many establishments are branches of firms with headquarters in these regions. The three heavy industries handle on average more than 100 tons of materials per man-year. In contrast the Other Manufacturers group handles on average less than 10 tons per man-year. Transport costs are substantially lower and their method of communication is by road. Consequently this group of industries is much freer in its choice of location.

2.64 Much of the employment in this group is on industrial estates and a high proportion of its employment is for women, though white collar jobs are comparatively

few in number. The main factor generally influencing the location of these establishments, other than Government planning, is therefore the availability of labour. This covers several different, not necessarily overlapping, requirements which are discussed in chapters 3 and 5.

2.65 The level of employment in each of three of the groups of service employment is broadly related to the total population of Teesside. Retailing (TIG 5) is widely distributed throughout Teesside though with large concentrations in the principal shopping centres. Employment in finance, the professions and government (TIG 6) is concentrated in a few central locations. Employment in health and education (TIG 8) is widely distributed. The last group of services employment (TIG 7) includes construction, utilities, transport and wholesale distribution. Its size is mainly related to economic factors and it tends to follow the transport systems in its pattern of location.

2.66 The definition of the survey area has brought within its boundaries a very small part of the Durham colliery. But TIG 9 is of small importance on Teesside since the last of the Cleveland iron ore mines closed in 1964.

2.67 This employment structure has several features that distinguish it from the national structure (see table 2.18). The most striking feature is the comparatively

Table 2.18. Percentage of total employment, Great Britain and Teesside, 1988

	Great Britain	Teesside
Heavy Industry (TIG 1-3)	12	40
Other Manufacturers (TIG 4)	26	9
Services (TIG 5-8)	67	48
Agriculture and Extractive (TIG 9)	5	2
TOTAL	100	100
Female employment	35	38

great dependence on a narrow range of industries, particularly steel and chemicals, and the corresponding absence of the variety of other industries that make up the national employment structure. Service employment too is relatively small on Teesside and this applies particularly to the professions, finance and government. The proportion of jobs for females in the employment structure is low partly because of the small size of the

service sector but more because of the unbalanced industrial structure. Finally, the proportion of white collar jobs is relatively low though the presence on Tesside of research and administrative sections of the main firms keeps the proportion from being excessively low.

Recent trends in employment

2.68 The cyclical nature of recent trends in employment is illustrated by selecting statistics for 1954 and 1955 and for 1958 and 1961 which were years of prosperity, and 1963 a year of recession. The key statistics are given in table 2.19. Two trends seem to be operating on Tesside if the recession of 1963 is ignored. First there is the steady growth in total employment although this was showing signs of slackening by the mid-1960's even if the effects of the 1963 recession are discounted. This slackening is evident in the other key indicator, the estimated migration, which by 1963 was showing a net outward migration from Tesside.

2.69 The second and related trend is the structural change in the economy. By 1958 employment in manufacturing had reached a peak mainly under the stimulus of growth in employment in chemicals. Thereafter employment in chemicals remained steady but employment in heavy engineering had started to fall in 1959; in shipbuilding in 1961; and in steel in 1962. The 1963 recession accelerated the decline in employment although by 1965 some recovery was apparent but only on a short term. The decline in basic manufacturing was not compensated by any significant increase in other manufactures though a slight upward trend was apparent after 1961. The construction industry has been expanding its employment from 12,000 in 1959 to 22,000 in 1966 under the impetus of a high and accelerating rate of investment in plant in the capital intensive industries. But much of the expansion in services, which has been at the rate of nearly 2,000 jobs in a year since 1955, represents a 'catching up' process. That is, employment in health and education and retailing has been expanding on the provision of these services approaches national levels. This expansion in services has been the basis too of the steady rise in female employment.

2.70 The unemployment situation has differed in its intensity for males and females. The greater dependence of males on jobs in heavy manufacturing and the insecurity of these industries has meant that there have been considerable fluctuations in male unemployment. In particular it appears that in periods of national or

regional recession male unemployment rises sharply as some heavy industries go on short time or indeed close down their less efficient plant. The general tendency was for male unemployment to rise during this period, a trend that was accentuated by the greater severity of the 1963 recession compared with that in 1958. Female unemployment however shows no sign of a similar trend and is not as susceptible to cyclical variation.

2.71 In these circumstances any tendency for the employment structure to change such that the proportion of employment in heavy manufacturing industry is reduced, and the proportion in other manufacturing industry and services is increased, should be encouraged. It would indicate a changing economy which would be less liable to fluctuations in male employment and which would give greater opportunities to females.

2.72 The growth in total employment on Tesside since 1954 was slightly faster than in Great Britain and more than twice as fast as in the rest of the Northern Region though the same pattern was apparent in all three; a slight decline in manufacturing and extractive industry more than offset by a rapid rise in services. The rise in services was most rapid in Tesside and was particularly strong in the welfare services of health and education, a case of Tesside starting from a low level in which the area was deficient in these services. The comparative changes within manufacturing industries were striking in their differences. Thus Tesside's growth was occurring at a time when generally employment in chemicals was falling. The reverse was true in the case of metals, mainly because the steel industry of Tesside specialises in heavy steel plates and tubes, the slowest growing part of the British steel industry.

2.73 In conclusion therefore an analysis of the current employment structure of Tesside and its recent trends suggests the following:

a Tesside's rate of growth between 1951 and 1955 in population and in employment, faster than either regional or national trends, was due to an exceptional increase in basic manufacturing employment as the ICI works at Wilton came into production;

b the level of population of Tesside in 1961 was subsequently maintained and migration kept to a minimum by a rise in employment in the service sector to meet the backlog of deficiencies in the supply of services and the exceptional demands of a burst of activity in the construction of capital intensive plant by ICI.

Table 2.19. Changes in insured employees, Tesside, 1954-65 ('000's)

Temple Industrial Group	1954	1958	1961	1963	1965
1. Chemicals					
2. Metals	23.7	32.4	35.5	32.7	34.7
3. Engineering and Shipbuilding	33.7	38.0	31.8	30.0	35.6
4. Other Manufacture	18.6	21.0	18.4	14.0	18.2
	57.2	17.0	18.0	17.1	10.6
Sub-total Manufacture, 1-4	54.1	150.0	104.3	86.7	80.0
services, 5-9	65.0	72.1	80.7	84.3	80.0
agriculture and extractive, 9	5.8	4.5	3.5	3.8	3.3
TOTAL	124.7	122.5	188.5	174.6	163.3
males					
Female	123.0	121.1	184.3	172.4	161.0
	46.1	80.4	54.3	81.2	80.0
TOTAL, unemployment (included above)	2.5	2.5	2.0	1.6	3.0
male unemployment	5.4	2.8	1.0	8.4	2.6
female unemployment	1.7	1.0	0.9	2.2	1.0

Sources: (unadjusted) Ministry of Labour returns.
Note: 1965 figures are for June 1965.

The questions arising from this are related to the likelihood of a future growth in manufacturing employment arising from the activities of firms already in Teesside; and the possibility of Teesside continuing to receive an above average rate of growth in service employment as its population continues to rise by inward migration and natural increase.

Heavy Industry

2.74 Future prospects for growth in employment in firms in the chemicals industry already on Teesside are dominated by questions of productivity. Comparisons made by the National Economic Development Committee for the Chemical Industry show that the American productivity is considerably higher than that in Britain. This is partly a consequence of the greater size of the American market and the possibility of having a greater scale of plant. Substantial improvements in productivity have already been achieved in the chemical industry on Teesside, particularly at ICI Wilton. Mr. J. B. Clark, Chairman of the Heavy Organic Chemicals Division, ICI, has said that 'there is still some way to go before the high standards of productivity achieved, for example, by the best companies in America are reached. On the new plants coming into operation, the capital per employee is at least as high as on the corresponding plants in the U.S.' (*Financial Times*, 9th May 1966).

2.75 Increases in the productivity of the existing chemical industry on Teesside is one feature affecting future levels of employment. The other is the possibility for further expansion, particularly at ICI Wilton where a further 900 acres in the firm's ownership are likely to be developed. The likelihood of further expansion of existing firms elsewhere, for instance on the north bank at ICI Billingham, is more limited. In total therefore the likely trends in productivity suggest that future employment in the chemical industry already located on Teesside will continue at, or slightly below, its present level for the next twenty-five years, notwithstanding a considerable expansion in production and the use of the additional land at Wilton.

2.76 The future of existing firms in the steel industry (the greater part of TIG 2) is quite different. The key to the problem, as in chemicals, is the question of the minimum size of plant and of productivity. But unlike the chemicals industry, the steel industry on Teesside also poses the problem of relocation and the possible closure of smaller less efficient works. The Report of the Benson Committee on the Steel Industry, published by the British Iron and Steel Federation in 1966, pre-dates the establishment of the British Steel Corporation, but is the most recent and thorough examination of the British steel industry. It draws several conclusions that affect Teesside.

a Teesside (which includes Hartlepool) is one of the areas where an expansion of steel production and possibly an increase in employment could be expected such that Teesside would have 'two or one' works in the words of the Committee. This is taken to refer to the complex of works on the south bank of the Tees, extending from Cargo Fleet through Cleveland and Lackenby, possibly as far as Redcar; and Greatham works at Hartlepool which lies outside the survey area. Both these would be integrated works producing pig iron and a range of heavy steel products.

b Their selection of Teesside is a consequence mainly of its location on tidewater. The river Tees is capable of handling ships of about 65,000 tons upstream as far as Teesport and this channel could be extended as far as the South Bank wharves of the steel works. The Tees

and Hartlepool Port Authority have examined schemes to provide for 100,000 ton oil tankers, though that channel would not extend as far upstream. Even the possibility of 200,000 ton vessels has been considered but certainly the capacity for handling ore carrying vessels of at least 100,000 tons is crucial for the selection of Teesside as a future growth point.

c The Benson Committee also suggested a minimum capacity for efficient non-integrated works of 1.0 to 1.5 million ingot tons a year. Many of the smaller works 'appear unlikely to attain the target size ... several are small and on sites which would not facilitate further development, or have a high proportion of plant which will require replacing in the next ten years'. The Committee stressed that early redundancies and closures are not necessarily to be expected but a reasonable length of time should be available for planning the necessary corrective action to meet any social problems. Many such works have recently closed, such as Acklam Works, Middlesbrough. It is probable that others will close during the next twenty-five years but there is only one work whose possible closure would create a serious social problem. This is the Skinningrove works in Cleveland. No definite information is available as to whether in fact this works is likely to close but the possibility must be recognised that alternative employment would be required in the event of the works closing.

2.77 It is forecast therefore that employment in this industrial group (TIG 2) could fall by as much as 11,000 though a more likely decline would be by about 8,000, notwithstanding any increase in production. Employment at the main works between Cargo Fleet and Lackenby will remain assured but this would be offset by the probable closure of smaller works. This represents a continuation of the trends of the last ten years.

2.78 Shipbuilding and repairing employment has fallen to just over 4,000 workers at a modernised shipbuilding yard on the north bank and a ship repair yard on the south bank of the Tees. They form a very small part of the British shipbuilding industry and in view of the Geddes Report on the need for regional groupings in the industry, it would be unwise to rely on any employment remaining in this industry by 1991. This fell off the net increase in employment which seems probable by 1991 in the rest of this group (TIG 3) which is a highly specialised part of the engineering industry concerned with the design and construction of heavy plant including some remaining dependence on plant for the steel industry. Few markets remain for this industry on Teesside and there has been a steady increase since 1963 in attempts to diversify their products by the main firms including the largest, Heed Wrightson & Co. Ltd. These industries rely on rail access, mainly for the supply of steel, and on road and river for the transport of their products which frequently are heavy, large consignments. To this extent, they form part of the site oriented class of heavy industries located along the river. The main problem of this group, if shipbuilding is excluded, is that its employment fluctuates widely. By 1991, total employment is likely to be about 15,000, that is only slightly less than the combined shipbuilding and engineering group in 1965.

2.79 It remains to consider the likelihood of any increase in employment in heavy manufacturing as a consequence of the growth of establishments new to Teesside or the use of fresh resources. Only two new materials need to be mentioned. The first is natural gas, whether from the North Sea or from the recent finds in the North York Moors. This has two uses: as fuel or as raw material

In the chemical industry. The probability is that Teesside will be linked to the Gas Council's national grid by 1970; that this may be the sole method of distribution as fuel; and that transport costs of gas are relatively low so that Teesside would have little advantage over any other location in Great Britain. Its use as a new material is more likely, partly by existing plant on Teesside, and possibly by new firms. The other new material is potash, of which deposits exist and are to be exploited by ICI in East Cleveland but this is unlikely to do more than provide a certain amount of additional employment in Cleveland.

2.80 The other major resource is therefore the linked one of land and river. With one exception, virtually the entire river frontage downstream from Newport Bridge, Middlesbrough, that is the navigable portion, is either developed or in the ownership of industrial firms. This includes Bean Sands, the largest remaining undeveloped part of the estuary on the south shore, which is in the ownership of the British Steel Corporation, with a corridor owned by ICI. It will probably be used by the existing steel and chemical industries as part of their likely programme for rationalisation.

2.81 The major piece of unoccupied land on the north shore is at Seal Sands. This is 1,760 acres of land which could be reclaimed and is in the ownership of the Tees and Hartlepool Port Authority. It is very likely to be reclaimed and developed by 1981, part of it for additional port development forehadowed in the report of the National Ports Council, and at the preliminary planning stage by the Port Authority. A number of local planning considerations will have to be considered in its development and these are described in chapter 3, paragraphs 3.147-3.151. From the point of view of employment structures, two points are relevant. First, Teesside is too small and has too small a hinterland for any significant growth of the so-called port processing industries, such as flour or paper. Second, for reasons connected with the nature of the land, the cost of its reclamation and its location, only heavy capital intensive industries should be located in this area.

2.82 Several other areas might be suitable for heavy industrial development, including the land in ICI ownership at Cowpen Bawley east of Billingham; and the extensive area of flat land near the main railway at Ulley Nook west of Stockton. The development of these areas is much less certain and therefore no allowance has been made for future employment on this land.

Other manufacturing industries

2.83 This group (TIG 4) employed about 16,000 in 1956, a slight fall from that in 1954. It comprises a very diverse range of industries of which the largest employing about 7,000 is a group of activities that arrived on industrial estates in the first years of development area policy after the War. They include firms in dress, outerwear and telecommunications equipment and are mainly firms employing branch factories of firms in other parts of the country with very few local connections on Teesside. Several have closed in the post and there have been wide fluctuations in employment. Little net growth is forecast for these establishments. However, land remains to be developed on the older industrial estates and recently new estates have been established. The future use of this land is considered in chapter 3, paragraph 3.168.

2.84 The other firms in this group include baking and printing, wire and miscellaneous metal goods and firms supplying the building trade. A small growth is possible

with some of these industries, probably no more than to about 10,000 by 1981.

Service employment

2.85 The other sector in which reasonable forecasts can be made is in service employment on the assumption that population grows to about 704,000 and the labour supply to about 321,000 by 1981. The forecasts are based on comparisons with past trends, national standards of provision, estimates of productivity, and rises in personal income. Usually however the main criterion is the ratio of employment in a particular group to the size of population and employment.

2.86 Retailing, finance, professional services, health and education are all expected to grow rapidly, their employment increasing by about 80 per cent during the twenty-five year period from about 63,000 to 113,000. The main causes are, first the total increase in population of about 57 per cent during the period; and second a process of catching up. That is, the standard of provision of these services in 1956 is well below national standards and it is likely that a rate of growth faster than the national average will hold in the future.

2.87 The remaining services (TIG 7) are not expected to grow as rapidly, only by 21 per cent from 44,000 to 54,000. Three reasons contribute to this. First, the construction industry employed 22,000 workers in 1956, but 4,000 of these were employed by contractors working on new plant for ICI. This was an exceptionally high rate of investment leading to a level of employment that is unlikely to be repeated in any single year in the future. Second, the three major investments in utilities expected to serve Teesside lie outside the survey area at Sæfton Carrow (electricity), Hartlepool (gas) and Upper Teesside (water). Third, employment in rail and sea transport is likely to fall notwithstanding new port developments at Seal Sands and the construction of the liner train depot at Stockton.

Forecast of autonomous growth in employment

2.88 It is possible now to present a forecast of the employment on Teesside in 1981 arising from the two main sources:

a changes in the employment of firms and industries already on Teesside in 1956; and

b changes in services employment to meet the needs of a growth of population to about 704,000 and a growth in the supply of labour to about 321,000.

That is, the forecast of autonomous growth excludes all employment arising from the development of Seal Sands; or from the use of new industrial estates or the undeveloped parts of existing industrial estates; or from the development of other sites. These types of growth would have to arise by the establishment of new firms and industries on Teesside, a subject considered in the next section.

2.89 The forecast changes are shown in table 2.20 and a range of forecasts is shown for each group to emphasise that the possibilities for change are considerable in most industries, mainly the consequence of different assumptions about productivity. It would be quite wrong to aggregate these figures in any way to achieve a possible range on the total forecast as there is little likelihood that, for instance, the assumptions could be consistently low in each group.

2.90 The figure of 282,000 therefore represents a forecast of the maximum total number of jobs that

Table 2.20. Forecast of employment from existing firms and growth in population ('000's)

	1986	1991	possible range	change 1986-91
1. Chemicals	33.1	31.8	27-36	- 1.3
2. Metals	30.6	22.0	19-28	- 8.6
3. Engineering and Shipbuilding	16.7	15.9	11-25	- 0.7
4. Other Manufactures	17.3	21.2	13-24	+ 3.9
5. Retailing	21.6	41.2	36-41	+19.6
6. Central Services	30.9	39.4	35-41	+8.5
7. Non-Personal Services	37.4	63.8	51-65	+26.4
8. Health and Education	16.9	30.6	30-31	+13.6
9. Agriculture and Extractive	4.2	2.0	2-2	- 2.2
TOTAL (Rounded)	187.5	280.4	-	+ 92.9

can be relied upon in Teesside by 1991 assuming that the population itself increases to about 704,000.

Employment policy for Teesside

The 1991 employment gap

2.91 The basic requirement of planning policy can now be defined in terms of the employment needed to sustain a growth of population to a level of 704,000 by 1991. It is presented as a balance sheet in table 2.21. Striking a balance sheet is an arbitrary but essential exercise for the purpose of preparing a land use and transportation plan but it is based on an interlocking and consistent set of assumptions. The fundamental assumption is that it will be regional policy for the population of Teesside to grow by natural increase and by an inward migration attracted by its high level of employment. The other assumptions follow directly from this basic aim:

a female activity rates will rise to national levels as a more diversified employment structure is created, offering a wider choice of jobs for women;

b the proportion of workers in employment in services will also rise to national levels as population grows and as more women seek work, causing family incomes to rise;

c average unemployment rates will be low;

d daily travel-to-work to Teesside will be at a higher level than at present because of the greater mobility afforded by the rising car ownership and the relative attractiveness of Teesside compared with other parts of the North East;

e it would be unwise to rely upon the existing industries of Teesside offering more than about 91,000 jobs by 1991, that is, slightly less than their level of employment in 1986.

2.92 Therefore the scale of the deficiency in employment is that about 61,000 jobs are likely to be needed in the new activities to be attracted to Teesside during the next twenty-five years. The scale of this deficiency is a crucial figure for the preparation of an urban structure policy for Teesside as it makes possible an estimate of the maximum amount of additional land to be provided

for future growth in employment and the necessary investment in a communications system and infrastructure to serve these activities. Thus to give reasonable flexibility to urban structure policy, a comparatively high estimate of the deficiency has been made. It takes, on the one hand, relatively high forecasts of the numbers of people seeking work and, on the other hand, low forecasts of the amount of work likely to be offered by the existing industries of Teesside.

The aims of employment policy

2.93 It is not sufficient, however, only to measure the size of the employment gap in 1991. It is necessary also to give some consideration to the kind of employment that should be brought to Teesside so as to create the most desirable employment structure that will remedy the current deficiencies and aid migration to Teesside.

2.94 The main weakness of the existing structure is the relatively low proportion of jobs that are available for women. However, forecasts of the likely activities in service employment and in changes to existing industries show that they will provide for all but a small amount of the expected growth in female labour supply. The new activities to be brought to Teesside need not therefore be big employers of female labour.

2.95 A second weakness of the existing structure is the comparatively small number of jobs in the service sector. However, this sector has been growing rapidly and consistently in recent years and it was assumed that this trend will be maintained as population and incomes rise and as the process of catching-up with national standards continues. There are, however, two special issues that need comment. At the present time Teesside has only 2,000 jobs in central government administration, mainly local offices such as those of the Ministry of Labour. In the interests of diversifying its range of employment opportunity, Teesside should be selected as a suitable location for the dispersal of central government offices. A further 1,000 jobs have been allowed for arising from the proposed Teesside University,

Table 2.21. Teesside employment balance sheet, 1991 ('000's)

	male	female	total
resident working population	253	102	355
unemployed, at 1.5%	3	2	5
plus net weekly travel-to-work	15	2	17
TOTAL labour supply	271	106	377
jobs in favourite and primary activities existing in 1986	71 (84)	20 (18)	91 (101)
jobs in services required for a population of 704,000	90 (88)	74 (41)	164 (129)
jobs required in activities not on Teesside in 1986	63	6	69
TOTAL employment	224 (142)	100 (59)	324 (198)

Note: figures in brackets show employment in 1986.

though it is realised that this may be a longer term proposal.

2.86 It was noted previously that very few natural resources remained to be exploited on Teesside. The principle resource is Seal Sands though it is probable that the use of this depends on the provision of adequate supplies of water; this is discussed in chapter 3. It is likely that the scale of permanent employment on Seal Sands, excluding construction workers, could be as few as 5,000 workers.

2.87 The possibility has been examined of a substantial amount of new employment being provided by the development of a single large establishment over a relatively short period of time. An example of such an establishment might be a major assembly plant for the car industry or a steel strip mill. An establishment of this character would probably draw upon a wider area than Teesside for its supply of labour, looking as well to Darlington and Ayrcliffe. It is possible to envisage too that the addition of another very large establishment might lessen some of the problems of the Teesside employment structure. In any case, it is not possible at this stage to rely sufficiently on such a development actually occurring for it to form a basic feature of urban structure policy, although it would be desirable for the policy to have the flexibility to accommodate this possibility.

2.88 At the end therefore the aim of employment policy must be to attract to Teesside a steady growth in manufacturing industry of the scale and character to be found on industrial estates but employing high ratios of male workers. That is, allowing for the development of Seal Sands, offices and a university, land should be provided as industrial estates for about 83,000 workers. It will be shown in chapter 3 that space capacity on existing estates and land in industrial ownership could provide for some 35,000 jobs leaving a balance of 22,000 jobs for which new estates should be recommended.

2.89 The implications for regional planning policy of an additional requirement of 83,000 jobs on Teesside in the next twenty-five years for manufacturing firms new to the area (including those at Seal Sands) are vital. An examination of the record of the granting of Industrial Development Certificates in the Northern Region points to the main implication.

2.100 The figures in table 2.22 show the employment that had been expected to arise from development at the time of granting the certificates. They give an indication of the effects of policy since 1948 even though, on average, the actual employment was usually less than that anticipated. The main point is that during this period Teesside had slightly more than its fair share of all employment arising from the granting of I.D.C.'s compared with its share of total employment in the Region; but its share of those granted to firms new

to the area since 1948 was much smaller. This was because a large proportion of the growth in employment was by expansion of firms already in the area in 1948. The same held true for Tyne-side. New firms went in disproportionate numbers to the rest of the Northern Region, especially to Darlington and South West Durham.

2.101 On average during the seventeen years since 1948, the Northern Region had promise of 7,400 additional jobs each year from the granting of I.D.C.'s, of which 3,200 were by firms new to the Region. This rate has accelerated since the passing of the Local Employment Act, 1960. Since then, the annual average has been 15,000 additional jobs, of which 8,700 were from new firms. If Teesside had received its proportional share of this annual increment it would have received about 900 new jobs each year. That it did not is irrelevant at this stage. What is relevant is that the total requirement of 83,000 additional jobs during a period of twenty-five years means an average of 2,300 jobs a year and a crude approximation suggests that nearly 1,800 jobs per year may be needed during the next ten years.

2.102 It is not strictly correct to calculate an average for a period of this length. Nonetheless, it is quite clear that if the employment arising from the granting of I.D.C.'s to new firms for the whole of the Northern Region continues at its present level then Teesside should receive at least a third of these jobs. This implies that Teesside would be favoured to the extent of receiving twice its proportional share of new employment in the Region by the criterion of its present share of total employment; or that it would receive more than three times the share that it has been actually receiving during the 1950's. The only alternative to this preferential treatment of Teesside, if the population policy is to be retained, is that a much larger number of new jobs must be created in the Northern Region as a whole each year than has been the recent experience.

2.103 In summary therefore the positive aims of employment policy should be:

- a the attraction to Teesside of employment for 83,000 workers on industrial estates by 1991. This employment should be in a variety of manufacturing industries and a high proportion (as much as three-quarters) of the jobs should be for males;
- b the development of Seal Sands by heavy, capital intensive industries and port facilities. This should be low density development likely to provide about 8,000 jobs, mainly for men;
- c the attraction to Teesside of central government offices or other forms of major office development. An allowance has been made of 2,000 jobs but the number could well be larger;
- d the establishment of a Teesside University, for which 1,000 jobs has been estimated.

Table 2.22. Employment expected to result from I.D.C.'s, 1948-68

	% of total employment 1956	% of new employment from I.D.C.'s	
		total	Share new to the area since 1948
Teesside and Hartlepool	57.2	20.8	42.7
Tyne-side	30.7	26.8	22.4
Darlington, South West Durham	7.8	15.2	34.2
Doncaster and West Yorkshire	10.1	13.8	17.8
Rotherham	34.8	1.6	22.5
TOTAL, Northern Region	100	100	100

Source: Northern Regional Office, Record of Trade.

Table 2.23. Percent employment in Teesside, 1995 (000's)

Teesside Industrial Groups	male	female	total	% of total	
				female	white collar
1. Chemicals	39.6	5.1	44.7	1.68	41.4
2. Metals	25.2	1.7	26.9	7.9	28.1
3. Engineering and Shipbuilding	12.0	2.4	14.4	16.9	43.8
4. Other Manufactures	47.1	17.3	64.4	23.3	30.0
5. Retailing	14.5	28.8	43.3	44.5	75.5
6. Other General Services	30.5	19.5	50.0	46.8	91.0
7. Non-personal Services	47.1	5.7	52.8	12.8	11.5
8. Health and Education	0.8	22.0	22.8	60.8	88.5
9. Agriculture and Extractive	1.9	0.2	2.1	10.8	87.0
Sub-total, TIG's 5-9	123.4	27.3	150.7	55.8	83.9
6-9	32.6	76.0	108.6	44.4	60.6
TOTAL (rounded)	254.2	152.3	406.5	32.3	43.3

Recommended employment structure

2.104 The final consequences of this employment policy can be illustrated in table 2.23. For ease of comparison, it is in the same form as that for 1995 given in table 2.17.

2.105 The main characteristics of this new employment structure would be:

a the proportion of service employment (TIG's 5-9) would have risen from 49 per cent to 53 per cent. This would still be a lower proportion than that in Great Britain in 1988, bearing out that the forecast rate of increase in service employment on Teesside is probably conservative;

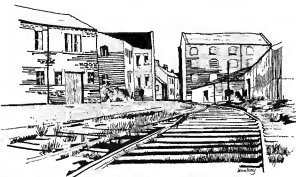
b the proportion of heavy manufacturing employment (TIG's 1-3) would have fallen from 40 per cent to 23 per cent. Teesside would thus still be a predominantly

heavy manufacturing area but its dependence on these industries would be much reduced;

c the proportion of jobs for females would have risen from 28 per cent to 32 per cent but the continued domination of the economy by heavy industries would probably still have the effect of keeping the rise at a lower level than in the country as a whole;

d the proportion of white collar jobs would have risen from 36 per cent to 48 per cent in conformity with the likely national trend.

2.106 If the measures are successful and migration does take place at the assumed rates then the employment structure of Teesside would have become much more attractive in the sense that it would offer a much more diverse variety of jobs; would probably be less liable to cyclical unemployment; and would provide a basis for continued long-term growth.



3 Teesside, a planning appraisal

Summary

a Nine major aspects of Teesside are examined to establish their problems and possibilities that should be taken into account in formulating an urban structure policy for Teesside.

b Examination of natural environment and resources establishes that the main geographical constraints on future urban development are set by the location of the better agricultural land; the need to give priority to nature conservation and amenity; and the need to avoid areas of featureless or relatively featureless environment or that are liable to atmospheric pollution.

c Analysis of the current housing stock and the future demand for new houses shows that an average building rate of between 4,000 and 4,500 houses a year by 1991 is required; 3,000 a year, rising to nearly 4,000 a year by 1991, for population growth; the balance for the replacement of about 20,000 dwellings that should be shared as slums. In addition there should be a programme for the rehabilitation of poor quality housing areas affecting more than 30,000 dwellings.

d Land has already been committed by planning permission or other planning action sufficient for the development of 50,000 new dwellings mainly south of Middlesbrough and at the coast. This land will be required for a further 53,000 dwellings by 1991.

e Average per capita expenditure will double by 1991 at constant prices though the increase in expenditure on the retail trade will increase by a lesser amount, 80 per cent, and that on housing by 100 per cent; that on motor vehicles could increase by a much greater proportion of the order of four fold.

f Average car ownership is likely to triple by 1991, to 36 cars per 100 persons, or slightly more than one per family. Mainly as a consequence of the increase in population, the average weekday number of trips made on Teesside will rise from 723,000 in 1965 to 1,445,000 in 1991. But because of the increase in car ownership and the dispersed pattern of population and activity, the proportion of these trips made by public transport will fall from 45 per cent to about 20 per cent.

g In 1965 there were 400 miles of main roads, of which 70 are to be improved by concerted schemes. The flows of road traffic show comparatively little variation, the peak hour carrying about 10 per cent of the daily flow. As a consequence there is little congestion except at the approaches to the most frequently used Tees bridges.

h The rail system is little used for passengers, carrying only 8,000 passengers a day. Its main use is for bulk movement of goods, especially coal and chemicals.

i The river Tees is intensively used by the heavy industries, mainly imports of raw materials. This will

continue as the river channel, docks and wharves are improved downstream from Middlesbrough, currently on the south bank but in the longer term at Seal Sands on the north bank. The river could be improved to accommodate ships of 100,000 tons or more.

j The shopping pattern comprises two main centres at Stockton and Middlesbrough; district centres including a new centre at Billingham and one under construction at Thornaby. Future policy should be to create a dominant regional centre at Middlesbrough with an increase in floor space from 1.2 million square feet in 1965 to 2.6 million by 1991. There should be a small increase in floor space at Stockton and the development of future district centres.

k Sites are suggested for the Teesside University at Greenby Bank, and the Teesside Polytechnic at central Middlesbrough. Current policies are accepted for the concentration of hospital services in a few large district hospitals; and for the concentration of secondary education on large campus sites.

l A system of urban open spaces should be developed containing a provision of more than two acres per 1,000 population for public playing fields, golf courses; school campus sites; and parks.

m These should be supplemented by the creation of country parks which would concentrate much of the recreation demands made on the countryside at accessible, suitably equipped sites to ease pressure on the National Park. These should take advantage of natural features and four sites are suggested: Wynyard Forest and Billingham Beck; the Leven Valley; Eton Moor; and Great Aylton Moss. Additional facilities should be developed on the coast.

n Seal Sands on the north bank is the sole remaining piece of reclaimable land in the Tees estuary suitable for heavy industry and port development. The other extensive area suitable for large scale industry is west of Stockton at Uley Hook provided it does not create atmospheric pollution.

o The undeveloped parts of existing industrial estates could provide for 31,000 jobs by 1991. New estates will be needed for the additional 22,000 workers in light industry expected by 1991. These estates should be about 100 acres in size and should be located close to the primary road system.

p At present, 80 per cent of the employment on Teesside is dispersed in a narrow belt largely situated between Stockton, Billingham, Middlesbrough and Eton. The effect of the full utilisation of existing industrial commitments will be to extend this belt upstream nearly as far as Embsaycliffe. The effect of the residential land commitment will be to encourage some dispersal of service employment. The pattern for female employment is slightly different from that for males

with more concentration on the two central areas of Stockton and Middlesbrough.

Natural environment and resources

Climate and atmospheric pollution

3.1 Teesside is an area with a relatively low rainfall of about 26 inches per annum. This low rainfall means that there is a risk of drought affecting farming in about five years in ten, a situation which has implications for the demand for water resources in the area. There are variations in local climate within Teesside associated mainly with altitude and topography. On high ground roughly above the 300 foot contour snow lies longer on the ground and exposure is greater, although the conditions are not so severe as to prevent urban settlement.

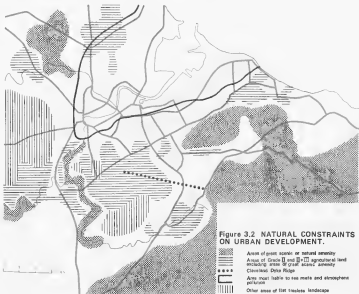
3.2 But the main problem is that the area is liable to light north-east winds during spring and early summer. These winds carry mists that have their origin at sea and over the deep ground of the estuary and are blown south-westwards over urban Teesside. The unpleasant effect of these mists is greatly intensified by the presence along both banks of the river Tees of Billingham, Middlesbrough, Eton and Redcar of major industries that emit various forms of atmospheric pollutant (see figure 3.1).

3.3 Fortunately this phenomenon is comparatively rare; on average these winds occur during about 10 per cent of the year mainly in spring and early summer.

At this time large areas of Teesside below the 100 foot contour are strongly affected by pollution, including most of the built-up areas of Billingham, Stockton, Thosby, Middlesbrough and Eton. The dominant wind directions are from the south, south-west and west (50 per cent of the year) when climatic conditions are less liable to give rise to an inversion fog; the air is less likely to be very humid and the main sources of atmospheric pollution lie downwind from the urban areas. In these circumstances pollution is less intense and its effects are blown out to sea.

3.4 The subject of atmospheric pollution has been studied by the Teesside Clean Air Committee as well as by responsible government departments. The general position is as follows:

a. the total level of pollution is in a sense constant. The administration of the Clean Air and Alkali Acts is doing a lot to reduce levels of pollution caused by grit and dust and smoke although the main cause of reduction have been the lessening use of coal as a fuel, the closure of older works such as at Ironmaster in North Middlesbrough and the clearance of older bye-law housing. Certainly, more remains to be done in the way of defining smokeless zones. But this improvement is offset by a rise in gaseous pollution particularly from sulphur dioxide released through the burning of sulphurous fuels, especially fuel oil by industry and vehicles. This type of pollution is much more difficult to control though the substitution of natural gas for the fuels currently in use might reduce the volume of sulphur dioxide considerably. High chimneys are the



more effective means of disposal but their effect may be offset during the temperature inversions that are such a feature of Teesside's climate. And the high chimneys are used only in large scale industry, leaving smaller plant and vehicles' exhaust unaffected.

b In general average levels of pollution on Teesside are probably no greater than in other urban areas of England and Wales. The distribution and number of measuring gauges permits only a very general conclusion to be drawn but it appears that the only areas with pollution significantly higher than average are downwind from the main industrial areas, that is, east and northeast of ICI Billingham along the river Tees. For instance pollution levels are high at Harton Hill and at Immingham though even in the latter there has been a considerable reduction in smoke and dust.

3.5 The conclusions to be drawn from this situation are clear. The extension of smokeless zones, possibly the introduction of natural gas as a fuel, and improved methods of control can do something further to reduce pollution. But in principle the facts of geography and climate show that Teesside will always have the problem of mists and fogs resulting from temperature inversion whose effects are felt mainly below a level of 100 feet above sea level. The additional effects of industrial pollution of the atmosphere are felt for most of the year along a belt of Teesside extending east and north-east downwind roughly from ICI Billingham though that works is by no means the sole source of pollution on Teesside. This area is not therefore desirable for residential development (see figure 3.2). But on occasions, especially during spring and early summer, a change in weather will bring the pollution belt back over urban Teesside especially Stockton and north Thorneby.

Water supply

3.6 The increasing demand for water on Teesside is of major importance for future development. Water supply is carried almost entirely by the Tees Valley and Cleveland Water Board which has a number of reservoirs in the Tees valley above Darlington and a few small ones in the Cleveland Hills. In 1985 they supplied 65 million gallons per day (m.g.p.d.) to the Teesside authorities, of which 33 m.g.p.d. was pumped from the river Tees at Broken Scar and 32 m.g.p.d. was supplied from reservoirs. A further 7 m.g.p.d. was pumped from the river Tees by Darlington County Borough water authority. This left a guaranteed minimum flow of 10 m.g.p.d. in the river Tees at Broken Scar.

3.7 The main problem in forecasting future demand is that 77 per cent of the supply is made to metered industrial users particularly the steel and chemical industries. Forecasts have been made of future demand but they differ greatly (see table 3.1). The reason for the differences lies in the varying assumptions about growth in the industrial demand for water. The Water Board, responsible for actual supply, anticipates a levelling off in the 1970's. The Water Resources Board assumes that industrial developments such as those described by ICI in their forecasts to 1971 should not be regarded as unlikely to occur. Thus industrial development of Seal Sands could be seen as being analogous to the recent ICI development and the future demand for fresh water could continue to rise rapidly.

3.8 The Water Resources Board reports that the authorised resources in 1985 were about 75 m.g.p.d. These will be augmented by 36 m.g.p.d. in 1995 when the new reservoir at Cow Green is in operation. Short

Table 3.1. Future demand for water, Tees valley (million gallons per day)

	Tees Valley and Cleveland Water Board (1)	Water Resources Board	
		1985 Report (2)	1987 Report (3)
1985	65	65	65
1971	66	69	106
1985	n.t.	n.t.	127
1985	66	127	n.t.
1991	60	142	n.t.
2001	n.t.	176	199

Sources: (1) Experts of the Tees Valley and Cleveland Water Board.
(2) Report on Water Supplies in the area of supply of the Tees Valley and Cleveland Water Board, 1985.

(3) Interim Report on Water Resources in the North (N.W.S.D., 1987).

Note: n.t., not tabulated available.

term solutions will be necessary until Cow Green is operational including pumping of ground water and further abstractions from the river Tees but these is likely still to be a deficiency in the later 1980's.

3.9 The Cow Green reservoir will only meet requirements to about the mid-1970's though it would also have the benefit of increasing the minimum daily flow in the river Tees to 16 m.g.p.d. thus helping to improve the polluted condition of the lower river Tees. But even with Cow Green the deficiency in supply could be as great as 16 m.g.p.d. by 1981, by between 30 and 40 m.g.p.d. by 1991, and by about 100 m.g.p.d. by 2001. The Hydrological Survey of the rivers Wear and Tees, made in 1961 by the Ministry of Housing and Local Government, showed that the full potential of the Tees valley was about 280 m.g.p.d., whose exploitation would probably require a further twelve reservoirs in the valley upstream from Broken Scar. Although the sites were identified, neither the technical feasibility, nor the cost of constructing the reservoirs was established. The precedent of Cow Green shows too that there would be a clash of interest in the development of many of these sites.

3.10 It is clear therefore that an urgent reassessment of likely industrial demand for water needs to be made and of the feasibility of meeting the demand either by developing the resources of the river Tees or by importing water, say from Morecambe or Solway Firth, should three schemes go ahead, or from other parts of the Northumbrian River Authority's area. Failure to provide the water could prejudice the industrial development of Seal Sands and the continued growth of production in the steel and chemical industries of Teesside.

Mineral resources

3.11 The major mineral resources of Teesside are rock salt and anhydrite now that the ironstone of the Cleveland Hills has been completely worked out, the last mine closing in 1964. These ironstone workings have left a legacy of shale tips and subsidence which create local problems but nothing significant for the planning of Teesside as a whole. The vast reserves of rock salt and anhydrite are being worked currently by the chemical industry. The salt is worked by brine pumping, the anhydrite is mined, but in neither case does the extraction present any general problems of subsidence.

3.12 Sand and gravel is worked at three large quarries northwest of Stockton in wet workings. Reserves here and nearby in the Skaale Valley are sufficient to meet the needs for local supplies probably for the next fifty years.

Brick clay, whinstone and magnesian limestone are worked but reserves are small.

3.13 The survey area includes a very small part of the Durham coalfield lying northwest of Sedgefield with the single colliery of Plathburn. The area has the usual local planning problems associated with coalmining but it is too small and marginal to Teesside to have any effect on its urban structure.

3.14 Two new mineral resources need mention. Deposits of potash have been found in workable quantities near Staithes in East Cleveland. It has recently been announced that these are to be worked by ICL, care being taken to avoid adverse effects on the amenity of the North York Moors National Park. The exploitation of the deposits is expected to provide about 500 jobs in the area but is not expected to lead to any additional industrial development on Teesside. Natural gas has also been found in economic quantities in the National Park on the moors south of Guisborough. Decisions about the use of the gas depend on the Gas Council but it seems unlikely that the gas will have any significant local effect on the industrial or urban structure of Teesside.

Agricultural land

3.15 A provisional classification of agricultural land was carried out in 1965-66 by the Ministry of Agriculture, Fisheries and Food. Teesside contains no land of Grade I quality. Arable cash crops are grown on the extensive tracts of Grade II land mainly south of urban Teesside and in other isolated pockets. This Ministry would object strongly to the use of this land for non-agricultural use. Otherwise most of the lowlands in Teesside are Grade II+III or Grade III, that is land on which any definite proposals for urban development would need to be surveyed by the Ministry before deciding whether such development could be accepted by them. The relevant areas are shown on figure 3.2. The remaining land is of poorer quality for agriculture.

Forestry and woodland

3.16 At the present time there are about 11,000 acres of woodland remaining on Teesside. More than half of this is in small woodlands few of which are showing signs of natural regeneration. The main woodlands are part of the parkland laid out in the eighteenth and nineteenth centuries south of Teesside and at Wynyard Park north of Stockton. Teesside is poorly wooded and only a third of Teesside lies within sight and influence of woodlands. This situation is worsening because of the failure of natural regeneration of small woodlands and hedgerow trees.

3.17 This analysis has several major implications for planning policy. First, the presence of forest and hedgerow trees in an area to be developed for housing purposes increases greatly the chances of creating a desirable environment. Thus in areas where future residential development is to take place a policy of management should be implemented as soon as possible, by preservation and planting before development takes place (see chapter 15). It means too that areas of small woodlands and hedgerows are, other things being equal, more desirable for residential development than open, treeless areas. Secondly, forest areas can, if suitably managed and planned, form attractive areas for recreation. The most suitable locations for such forest parks would be along the

northern edge of the Cleveland Hills in areas which were formerly wooded and at Wynyard Park (see chapter 16).

Nature conservation

3.18 Until recently, the main method of safeguarding landscape resources has been by the definition of national parks, areas of outstanding natural beauty, nature reserves and sites of special scientific interest. But a wider approach has been brought in by the Countryside Bill 1967, which regards the countryside as a general landscape resource for recreational and educational purposes. For this purpose Teesside can be divided into a series of ecological areas of varying character and interest as follows:

a the coast, which comprises Jurassic cliffs east of Saltburn and a low shore of boulder clay cliffs and sandy beaches west of Saltburn backed by an agricultural coastal plain dissected by steep, narrow wooded valleys;

b the Tees estuary partly consisting of river-borne alluvial mud flats, partly of beach material brought by the southward drift along the coast. It is of strong ecological interest. It contains Seal Sands, part of which has been declared a Site of Special Scientific Interest; this is the only extensive area of inter-tidal mud flats on the northeast coast between Lindisfarne and the Humber and is of great ornithological interest. This interest is greatly strengthened by the existence of the salt marshes of Greattham Creek and Cowpen, alongside Seal Sands. Much of these too are an S.S.S.I. of ornithological and botanical interest;

c the Tees lowlands, the remainder of Teesside below 450 feet above sea level, which contain isolated examples of interest such as parkland, minor streams and marshes, but no areas of concentrated or extensive ecological interest;

d the Cleveland borders, containing a variety of ecological types, which start with well-treed, undulating countryside and rise through the steep slopes to the moors. The Jurassic escarpment is deeply eroded and varied, of rich ecological and scenic interest both in itself and because of its quality as a backdrop visible to much of Teesside. Erosion has left outlying hills such as Eton Moors and the Upleatham Hills. Much of these border areas were formerly the scene of limestone workings;

e the moorlands, which lie mainly between 750 feet and 1,400 feet above sea level. The high moorland plateaus have a unique character among British moorlands because of its relatively low rainfall, making for heather rather than a grass, sedge or rush moor;

f the steep sided dales which penetrate the moorland, often with varied vegetation and scenery.

3.19 It is necessary to define two types of area requiring special management:

a educational nature reserves, which may include existing types of nature reserve and sites of special scientific interest;

b landscape resource zones, which are areas where there is a concentration of features of ecological interest whose conservation demands comprehensive planning. These would include educational nature reserves but also areas of less concentrated interest. They would be areas where, unless there was some overriding consideration, urban development would not be allowed and special arrangements would be made for access, management and control of use. They would not include areas where a significant demand would exist for recreational use. Two areas are

candidates for definition, the Tees estuary and the Cleveland borders.

Landscape and amenity

3.20 The dominant attractive area of Teesside is the North York Moors National Park, part of which lies within the Teesside Survey Area. Within the rest of Teesside it is possible to distinguish between the landscape north and south of the river Tees. On the north side the land climbs through a series of steps to the plateau at Sedgfield, 325 feet above sea level. The climate is slightly harsher than on the south side and the soil conditions change, particularly as one passes northwards on to the magnesian limestone. As a consequence topography is less varied, tree cover is much smaller and the landscape less attractive than much of the south of the Tees. The exception to this is the valley of Billingham Creek and the parkland and forest of Wynyard.

3.21 The Tees valley itself above Yarm is striking and very attractive. The river flows through a deeply incised valley out in the boulder clay with steep, wooded sides. Into it, near Yarm, flows the river Leven which also lies in a steep sided, wooded valley that is very attractive upstream as far as Hutton Rudby. The rest of the landscape south of the river Tees is more attractive than that on the north. Ridges, especially the Cleveland Dyke extending west-north-westwards from Great Ayton, divide the area into enclosed basins. It is a more wooded landscape except for the tops of the moors and the Smeaton plateau south of Middlesbrough and Thornaby. The Cleveland Hills and Eton Moor act as a dramatic backdrop to most of the lowlands. East of Scarborough, the scenery changes again, as one enters the hill country of Cleveland, moorlands with steep sided valleys.

Regional landscape and the natural constraints on planning

3.22 The preceding analysis can now be combined to present a synthesis of the landscape of Teesside and the suitability of different parts of the area for different types of activity purely from the points of view of landscape resources and the natural environment. The influence of accessibility and location of activities is brought into the discussion at a later stage. Certain areas should remain in agricultural use, or are suitable for conservation policies, whether it be for ecological or amenity reasons, and other areas appear to be suitable for general urban development. The synthesis is given in figure 3.2 and distinguishes the following factors as the most important:

- a agricultural land, Grade II and III, preferably to remain in agricultural use where forestry and amenity would be subservient to the interests of efficient farming;
- b landscape resource zones where conservation policies should reserve priority, though this leaves a conflict of interest in the use of Seal Sands to be resolved later in the report;
- c major areas for amenity, i.e. the National Park, Eton Moor, the river valleys and forests where recreation and amenity should receive priority over urban or agricultural development;
- d landscape features likely to be relevant in determining areas suitable for future residential development. The principal feature is the ridge line of the Cleveland Dyke which could demarcate areas for urban development;

e areas of featureless or relatively tree-less environment not likely to be capable of transformation into an attractive urban environment without substantial investment in landscaping;

f the main belt of atmospheric pollution, northeast of the industrial areas, which is unsuitable for general urban development.

Housing

3.23 The future demand for houses on Teesside arises from two major and two minor sources. The first major source is the formation of new households as the population grows and as patterns of household formation change. The second major source is the replacement of those parts of the existing stock of dwellings that should be cleared either because they no longer satisfy housing and environmental standards or because their sites are needed for some other use. The minor sources of demand are from households who have to share a single dwelling at the present time; and to ensure an adequate stock of vacant dwellings.

3.24 The demand for houses can then be compared with the size of the remaining stock of dwellings, after clearance, and a house building programme worked out. Three other factors will bear upon the definition and implementation of this programme: the immediate and short term requirements of the local authority sector; the current availability of land for residential development; and housing standards, particularly those relating to density and the size of dwelling.

Household formation

3.25 The main source of demand for houses to be built in the future will come from the anticipated growth in population. Their housing needs can be forecast by using the age-sex structure of the population forecast made in chapter 2. The method is to forecast the marital status of that population and then to consider separately the needs of the married and the non-married population.

3.26 It is possible to make a reasonably accurate forecast of the number of married couples in the population by applying recent marital status rates to the different age-sex groups in the forecast population. It was assumed that each married couple would require one dwelling as it did not seem necessary to make any allowance for 'two-house' families on the grounds that Teesside is unlikely to be an area where people who could afford to do so might wish to own a second house. This forecast covers three-quarters of the future total number of households.

3.27 The forecasts for the non-married households were made using 'headship rates' which are the proportion of the population in an age-sex marital status group who are heads of households. It is the best available method but suffers from two weaknesses. Data on present headship rates and past trends are limited. More seriously, it is likely that past and future rates depend heavily on the availability of suitable dwellings. In a situation of housing shortage or one where flats and small houses are not being built, it is likely that many non-married households will share a dwelling. For instance, unmarried children will live with their parents. In this way, past headship rates may be artificially low compared with what might be the situation if there had been an adequate supply of suitable accommodation.

3.28 Nevertheless past data show that headship rates are rising especially among young, single persons reflecting rising incomes and standards of living and changing social attitudes. It is likely that these trends will continue but difficult to say exactly how changes may take place. The forecast assumes that headship rates will rise in the future faster than in the past. However, if this proves wrong and rates rise in the future at the same rate as in the past then the total number of households forecast would be about 4,000 less than forecast for 1991, a comparatively small amount equal to about 2 per cent of the total (see table 3.2).

Table 3.2. Forecasts of households, Teesside, 1986-91

	population	households	persons per household
1986	438,000	147,480	3.24
1991	516,000	166,800	3.30
1976	538,000	162,300	3.30
1961	604,000	184,000	3.28
1951	704,000	212,800	3.31

Note: persons per household according to definition of Ministry of Housing and Local Government. The average size of household by the definition in the Home Interview Survey (which did not identify sharing households) was 3.34.

3.29 The method used to make the forecasts is the best available at present but it has limitations which should be borne in mind. However, the main cause of possible error is likely to be in the original population forecast itself. In particular its reliance on an assumed migration element. The number of households in 1991 that would be formed by people who had migrated to Teesside since 1986 or their descendants would be of the order of 18,000. This figure is much greater than any of the sources of error arising from the methods of forecasting. Therefore the validity of the household forecast depends heavily on the accuracy of the forecast of migration.

Sharing and vacancies

3.30 Two small additional causes of the need for new house construction are the reduction of the amount of sharing of a single dwelling by several households, and the maintenance of a supply of vacant dwellings. The amount of sharing in 1986 was small: something of the order of 5,000 households probably were sharing a dwelling with other households by the definition in table 3.2. The proportion of vacant dwellings was low, less than 2 per cent. This proportion probably should be higher, about 4 per cent, if there is to be a free and efficient market in housing. This would mean that there

should be about 5,000 vacant dwellings on Teesside by 1991.

Survey of housing and environmental deficiency

3.31 There were about 148,600 dwellings on Teesside in 1986 of which more than a third were built more than fifty years ago. The very oldest houses in the worst physical condition are being cleared and replaced at an increasing rate which stood in 1986 at 1,200 dwellings per annum. Various estimates have been made of the numbers still needing to be cleared by present day standards of fitness which, however, are concerned mainly with the actual house rather than the quality of the environment of residential areas as a whole.

3.32 To meet this problem, a survey has been carried out into housing and environmental deficiency (S.H.E.D.). Briefly, this survey has examined on a sampling basis the stock of houses on Teesside in their environmental context and has allotted an average number of 'deficiency' or penalty points per dwelling in each residential area. By this survey the greater the average number of penalty points in an area the poorer the quality of the residential environment and the more drastic is likely to be the remedial treatment to create an acceptable environment. The theoretical maximum was a total of 100 penalty points of which 47 derived from the dwelling and 53 from its location or environment. The survey was based on the following information, in each case using a crude index rather than a sophisticated measure:

the dwelling: condition; provision of bath, hot water and w.c.; house type; age; means of access; outdoor space; car parking provision;

its environment: privacy; noise; traffic; atmospheric pollution; landscape quality; density;

its location: proximity to public open space, shops, primary schools and public transport.

3.33 Examination of schemes such as that prepared for Deepfilth, Rochdale (H.M.S.O., 1986), and a cost-benefit analysis showed the following conclusions about residential areas:

a about 65 per cent of the penalty points allocated to an area could usually be given remedial treatment by rehabilitation instead of by complex redevelopment irrespective of the exact causes of the deficiency;

b the average cost of remedial action was about £30 per penalty point;

c areas with more than about 38 penalty points per dwelling were not worth rehabilitation; those with less were worth rehabilitation so as to give them a further thirty years of life at an acceptable standard from 1986.

Table 3.3. Survey of housing and environmental deficiency (1986's of dwellings)

priority group	total	clearance	redevelopment	rehabilitation	no action	overspill	total cost £ million
1	11.2	10.5	1.8	0.8	0	8.7	32.0
2	12.6	6.0	1.4	4.3	0.2	4.6	25.7
3	33.9	10.8	1.3	22.7	0.9	3.0	46.2
sub total	67.7	26.7	4.5	28.7	1.2	22.2	103.9
4	58.8	1.0	0.1	42.0	23.7	0.9	26.8
others	15.1	—	—	—	15.1	—	—
TOTAL (rounded)	141.6	27.7	4.6	71.8	40.1	23.2	120.7

Note: clearance includes complete clearance and partial clearance to permit better provision of open space, parking, etc.; rehabilitation includes numbers of dwellings remaining in areas subject to area rehabilitation; not all dwellings in such would necessarily have to be rehabilitated;

overspill includes replacement of a number of dwellings for whose sites alternative uses are likely;

costs include costs of clearance, redevelopment, rehabilitation and overspill of dwellings; costs of provision of services, landscaping, open spaces, local shops and primary schools; and cost of acquisition of land and slum dwellings.

3.34 Rehabilitation was taken to include the rehabilitation and modernisation of the dwelling itself; the provision of adequate open spaces, children's play areas, and car parking; rearrangement of circulation to give a measure of segregation of residential areas from heavy, through traffic; landscape and amenity treatment; renewal or rehabilitation of schools, shops and other social facilities.

3.35 Teesside was divided into 75 environmental areas. The survey showed for each area its priority for treatment; the number of dwellings likely to be affected by clearance, rehabilitation, development and redevelopment, making due allowance for changes of use such as a change from residential use to a central area use (in the light of the local plans described in Part Three) or the construction of a new part of the primary road system; and a first indication of the likely cost of treatment, including the replacement of cleared houses and their associated activities if new, overspill sites were necessary. The results are summarised in table 3.3.

3.36 The following priority groups were identified and are located in figures 3.3 and 3.4:

a priority group 1 are areas where nearly complete clearance would be required. Many of these areas are either already the subject of Clearance Orders or are included in local authority programmes for early clearance. They are located near the central areas of Stockton and Middlesbrough, and at Thornaby, North Ormesby, Grangetown and South Bank. Liability to

atmospheric pollution or competition from other land uses means that few of the areas would return to residential use after clearance;

b priority group 2 includes areas which will need either comprehensive clearance or intensive area rehabilitation;

c priority group 3 in general contains the other houses built before 1914 and is the heart of the rehabilitation problem. The first two priority groups broadly are similar to those areas already being treated by local authorities under existing legislation. The treatment of priority group 3 will be different. The buildings are sound but their environment is unlikely to continue to provide a satisfactory standard for living for another thirty years. Dwellings will have to be cleared to give a better environment for the remaining rehabilitated houses. Failure to give this treatment would mean a probable decline in the fitness of these areas as their fabric decays. To some extent, the rehabilitation of these areas has already started, with the payment of Improvement Grants;

d priority group 4 are mainly areas built during the last thirty or forty years. The deficiencies in these areas are likely to be of a nominal character. Their date of construction may have been too recent for a full provision of facilities to have been made or adequate landscape treatment may not have been undertaken. By the time that the real deficiencies of the first three groups have been remedied many of the apparent deficiencies



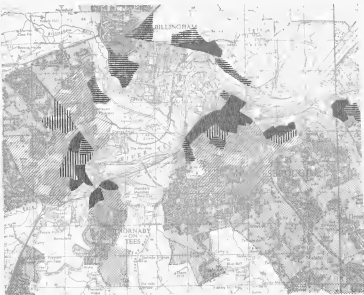


Figure 3.4
HOUSING
REDEVELOPMENT
AND
REHABILITATION
CENTRAL
TEESSIDE)



in this group will have corrected themselves although further action may still be required.

3.37 Three further things need to be said. First, this survey gives no more than a generalised indication of the scale and nature of the problem and a sequence of priorities for its treatment. The next stage, prior to implementation, is the preparation of planning schemes for each area, taking the survey results and translating them with other data into action area plans. Second, the priorities themselves have to be translated into phases for action related to particular years, as described later in the chapter. Third, it is likely that new legislation will be needed to give the authority and procedures for carrying out area rehabilitation; and financial arrangements will have to be made to enable local authorities to aid in the process. Methods for achieving this are foreshadowed in the White Paper, *Old Houses Into New Homes* (Cmd. 3602, H.M.S.O., 1968). But the essential step to implement this process will be to convince the people living in such areas that its rehabilitation is in their interest and that its success will be of their doing. Some of these problems are illustrated by the action area plans for the rehabilitation of Parkfield, Stockton and Southfield, Middlesbrough described in chapter 12.

3.38 The local planning studies show that no additional allowance has to be made for the clearance of houses whose sites are required for other purposes,

such as road schemes. The full allowance for this has been made in S.H.E.D.

Housing balance sheet and the housing programme

3.39 The various sources of demand for new dwellings may now be summarised as a housing balance sheet for the period 1965-81, shown in table 3.4.

Table 3.4. Housing balance sheet, Teesside, 1965-81
(numbers of dwellings)

	total population	net annual increase only
provision in 1961	704,000	542,000
existing stock, 1966	548,800	548,800
additional requirement, 1966-81		
household formation	86,400	49,600
replacement of slum and vacancies	10,600	9,600
Dec total - additional requirement	76,000	59,200
estimated stock, 1981	321,600	204,000
replacement needs, 1966-81		
new dwellings	78,000	38,400
replacement of slum and vacancies	27,000	27,800
total, construction	105,000	66,200
rehabilitation, equivalent units	12,800	13,600

Note: rehabilitation equivalent units give an approximate indication of the cost of rehabilitation expressed in terms of 'dwellings' and obtained by dividing the cost per dwelling of rehabilitation by the average cost per dwelling of redevelopment.

The housing programme

3.40 Four factors enter the recommended phasing of the housing construction programme over the twenty-five year period. They are:

a the rehabilitation policy assumes that the life of a rehabilitated dwelling is extended by thirty years provided action is taken before further decay causes a rise in the S.H.E.O. penalty points score for an area;

b it will probably take several years for the necessary climate of opinion to be created and legislation passed for the effective implementation of area rehabilitation;

c the demand for new dwellings by the growing population shows a steady rate of increase until the 1980's; after a slight dip in the rate of increase, it starts to rise again in the later 1980's. This dip occurs whether or not there is migration as a steady level of lowered migration has been assumed;

d it would be undesirable to have serious fluctuations in the forecast rate of demand for resources from the construction industry.

3.41 Three alternative policies for housing rehabilitation and new house construction were examined. One alternative showed that if an attempt were made to complete the most urgent work of rehabilitation by the mid-1970's there would have to be a sharp rise in the demands made upon the construction industry, to nearly 6,000 new dwellings per annum in the early 1970's, followed by a fall to about 3,200 new dwellings per annum in the early 1980's.

3.42 A second alternative showed that if the clearance and replacement of slum dwellings continued at its present rate, then serious consequences would follow. Action on rehabilitation would be delayed by about ten years compared with that in the first alternative leading to social injustice. But the delay would probably lead to a further decay in environmental and housing quality which would thus need a greater amount of resources to remedy. And this course of action would lead in all probability to fluctuations in the total demand made upon the construction industry both for new dwellings and rehabilitation.

3.43 The recommended housing programme in table 3.5 will ensure that rehabilitation work will not be too long postponed; will lead to a fairly steady rate of demand for new dwellings for replacement and population growth; and will lead to a steadily increasing demand for resources for new dwellings and rehabilitation from the construction industry. The phasing of the work of rehabilitation according to this programme is shown in table 3.6.

3.44 The record of the last few years shows that between 3,000 and 3,800 new dwellings were built each year and that slum clearances reached a record of 1,000 dwellings in 1955-56. These figures suggest that the resources needed for the recommended policy are

Table 3.6. Phasing of redevelopment and rehabilitation

priority group	period
1	1956-71
2	1971-76
3, over 30 points	1976-81
3, under 30 points	1981-85
4, over 30 points	1985-88
4, under 30 points	1988-97

probably feasible particularly if the necessary land is available for redevelopment or overspill and staff is available for its implementation.

Local authority housing

3.45 The implications of this housing programme are more serious for the local authority sector however than for the private sector. At present about one-third of the dwellings on Teesside are owned by local authorities, most of them having been built since 1945. Most of the demand for local authority houses in recent years has come from households displaced by slum clearance. Currently, around 90 per cent of such households seek a local authority house. This fact is obviously a consequence of family incomes in the oldest housing areas being among the lowest on Teesside. The demand from the remainder of the population for local authority houses has declined markedly in recent years and probably about two-thirds of the net annual increase in households is now housed either in owner-occupied dwellings or in the dwindling number of privately rented houses.

3.46 During the next ten years, 1965-75, the total need for new houses is likely to be for about 42,000 dwellings (see table 3.7).

Table 3.7. Need for new houses, 1965-75 (numbers of dwellings)

population growth by natural increase	16,700
population growth by migration	5,200
relief of sharing, excesses in vacancies	2,100
Sub-total	24,000
replacement of decayed dwellings	17,800
TOTAL	41,700

3.47 The proportion likely to need a local authority house can be estimated by making reasonable assumptions. Considering, first, the households displaced by clearance, it would be wise to allow for a high proportion of these needing a local authority house. Although their family incomes may rise, the occupants of dwellings to be cleared will all be among the poorest on Teesside. Turning to the need for population growth, it may be that the proportion of these requiring a local authority house will continue to fall in future as real

Table 3.8. Average number of dwellings per annum, 1955-81

	1955-71	1971-76	1976-81	1981-85	1985-81
new dwellings: for natural increase for migration	1,700 300	2,100 300	2,800 600	2,400 600	2,900 500
for replacement of decayed dwellings	2,100	1,400	1,100	800	100
Sub-total	4,100	4,200	4,500	4,100	3,500
rehabilitation (equivalent units)	100	400	500	700	1,300
TOTAL	4,200	4,600	5,000	4,800	5,100

incomes rise, but the clearance and rehabilitation programmes may upset this trend by reducing the supply of lower priced and privately rented houses. In these circumstances, it would be unwise to rely upon any further decline in the proportion of new households likely to be needing local authority houses.

3.48 On this basis, allowance should be made for about 23,000 local authority houses to be built in the ten year period. This implies an average rate of 2,300 houses per annum which is substantially higher than anything achieved in recent years; the highest rate was about 1,700 dwellings in 1953-54 and 1964-65; it means a return to the rates of the mid-1950's. The private sector however would continue at the rate of construction between 1959 and 1965, that is between 1,800 and 2,100 dwellings per annum.

Housing standards

3.49 The first standard to be considered is that of the size of dwellings. At the present time, the bulk of the housing stock is dwellings with five or six habitable rooms (see table 3.6). The tendency has been for the

Table 3.6. Size of dwellings, 1966 (numbers of dwellings)

1-4 habitable rooms	56,000
5-6 " "	70,000
7 and over " "	8,300

greater proportion of new houses to be of five or six rooms. But past trends in the range of household sizes show a decline in the proportion of larger and a rapid increase in smaller households, particularly of one or two persons. It seems clear that this trend will continue in future with the continuing rise of headship rates of non-married persons, particularly young persons.

3.50 At first sight, it seems that these trends are at odds and that there is a need to construct a larger proportion of small dwellings. But the situation is in fact more complex. The only adequate available data on trends in dwelling sizes is in terms of numbers of rooms. But the critical factor is more likely to be floor area as used in the report on *Homes for today and tomorrow*, the Parker-Morris report (H.M.S.O., 1961). Allowance has to be made for the lack of mobility in the population in particular the tendency for married couples to remain in their original home after the family has left. With rising incomes, under-occupation of this type could well increase. In any case, rising standards of living are likely to result in a requirement for more internal space. These latter two factors are likely to reduce the apparent need for more small dwellings for which, nevertheless, there is likely to be a growing demand.

3.51 This may apply particularly in the local authority sector. At present, the bulk of tenants are middle-aged persons with families and the vast majority of the houses are 'family dwellings' with two or three bedrooms. As the present tenants' families leave, there may be an increasing demand for smaller dwellings. Moreover, it is likely that the age structure of future tenants will have an increasing proportion of old people coming from the clearance areas.

3.52 The process of rehabilitation may create a greater supply of smaller dwellings, by conversion or by the installation of bathrooms; and in recent years the local authorities and private builders have begun to build more new small dwellings. But it should be the responsibility of the planning authorities to see that an adequate stock of dwellings is built up with a reasonable range

of dwelling types that will meet the needs of the various groups in the population. In a sense, the accuracy of the forecast of 221,000 dwellings by 1991 depends on the existence of such a stock in which the smaller households would be able to find a suitable dwelling rather than being forced to shew. But this means also that the different house types should be geographically distributed so as to give choice in the various parts of Teesside. The definition of a housing policy in this sense of a range of house types in suitable locations, forms a more detailed exercise on which work should be done by the local authority.

3.53 A second form of housing standard is the average net residential density that should be assumed in preparing urban structure policy and in determining the likely quantities of land needed for new housing. Density for this purpose is measured in terms of persons per acre, related to land occupied by dwellings, and gardens; incidental buildings, open spaces and children's play spaces; and local roads. This is the measure usually used but it raises problems of definition for urban structure planning which is concerned with the allocation of large areas of land for periods of development spread over twenty-five years. The problems are that the forecast of the number of dwellings needed over twenty-five years is more accurate than the number of persons; and that the average number of persons per dwelling varies considerably with the age of the dwelling. The forecasts in the next two sub-sections which are concerned with the amount of land and the distribution of population therefore have to rely on a different measure of density, namely, dwellings per acre.

3.54 It is suggested that a relatively low standard of density should be assumed for new development areas equal, on average, to about 40 persons per acre on local authority sites and 30 persons per acre on private sites. This would be sufficiently low to allow for considerable flexibility in the design and layout of individual sites, and in the actual range of net densities which could well vary very much between 20 and 70 persons per acre. This range would allow mainly for low-rise housing but with a proportion of flats and maisonettes near public transport routes whilst maintaining full facilities for car movement and parking.

3.55 The existing areas of comparatively high density are those most subject to area rehabilitation. Densities in these areas will be reduced, as a matter of practical design rather than as a matter of policy, to make adequate provision for open space and car parking. The amount of land where redevelopment is both possible and desirable is very small, not more than about 150 acres in total. Densities of between 70 and 120 persons per acre have been assumed to give a basis for calculation but the final densities will depend on detailed design studies. There is an argument for high-rise redevelopment on some of these sites in view of their locations near central areas and the probable rise in the demand for small dwellings.

3.56 A third form of housing standard is that implicit in the criteria used for the survey of housing and environmental deficiency. Some of the criteria were concerned with the location of residential areas: freedom from atmospheric pollution and, of equal importance in an area of heavy industry, freedom from industrial noise; freedom from the nuisance created by heavy flows of traffic having no business in the housing area. Within the housing area, there should be easy access to primary schools and local centres for pedestrians without undue interference from vehicular

traffic, and there should be an open space system with proper landscape treatment.

Residential land: need and commitment

3.57 Land will be required in the next twenty-five years for about 103,800 dwellings of which 4,600 will be on redeveloped sites and 99,200 on new sites. An analysis has been made of the existing commitment, that is land which to a varying degree has already been set aside for residential use either by planning permission; or by allocation on a town map whether approved or in draft.

3.58 The scale of this commitment is given in table 3.5 and its location is shown in figure 3.5. The two

Table 3.5. Residential land commitment, September 1988 (numbers of dwellings)

	local authority	private	unknown	Total
land with planning permission	8,300	21,500	—	30,200
others	8,700	4,400	8,900	20,500
TOTAL	15,400	25,900	8,900	50,200

Source: local authorities.

Note: unknown means that ownership of land, and development agency, is not yet known.

main concentrations are at Northcote-Marion, south of Middlesbrough, and in the coastal strip between Redcar

and Saltburn. The commitment in both areas is a consequence of the recent growth in employment south of the river Tees, mainly at ICI Wilton, and a recognition of the attractions of living in these particular areas. A small part of the commitment is in the rural parts of Teesside which are taken to include small county towns such as Great Ayton and Stokesley as well as villages and scattered houses. Guisborough and the former mining towns of East Cleveland however are not regarded as part of the rural areas as their physical characteristics are quite different. In 1966, about 6 per cent of the population of Teesside lived in the rural areas in about 9,000 dwellings compared with 5 per cent in 1951. The commitment for growth in these areas is already quite substantial, to the extent of about 3,000 dwellings or enough for between ten and fifteen years supply at the past rate of growth.

3.59 The most serious feature of this commitment, however, is the relatively small amount of land available for local authority housing. At current rates of about 1,500 dwellings per year this would be sufficient for about ten years. If the accelerated programme for re-development and rehabilitation is accepted it may only be sufficient for about six years. In contrast the private sector has sufficient land for at least about twelve years in theory though some of this land may be in areas for which there is little demand.

3.60 Therefore land will be required for a further 48,500 dwellings during the next twenty-five years



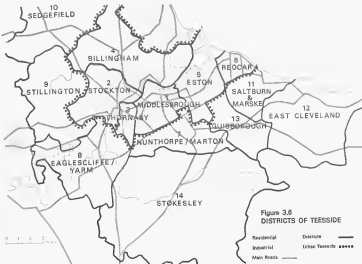


Figure 3.5
DISTRICTS OF TEESSIDE

over and above that committed by current planning policies. The following points are vital in selecting this land:

- a about 650 acres, or land for 7,500 dwellings, is likely to be needed for local authority housing during the period 1986-76 in addition to that already committed, in general no additional land is required for the private sector, though there may be a case for additional private sector housing in some parts of Teesside where pressure of demand is great;
- b land for the remaining 40,900 dwellings, about 3,900 acres, is not likely to be needed before about 1978;
- c nearly half of this additional, longer term requirement would be the consequence of inward migration to Teesside. It would be wise to recognise that this migration may not happen, although it should be encouraged, and that therefore suitable allocations should be made to permit a flexible urban structure policy.

Distribution of housing and population

3.61 The distribution of housing and population is best described by dividing Teesside into fourteen districts (see figure 3.6). The boundaries of the districts follow major natural features or land use areas; in many cases, they roughly follow local authority boundaries and the districts have been given names accordingly. Finally, 'urban' Teesside (districts 1-6) is distinguished from 'rural' Teesside (districts 7-14). Urban Teesside is the main built-up area in 1966, from Stockton and Thornaby, through Billingham, Middlesbrough, Eston and Redcar to the sea; rural Teesside is the remainder.

3.62 The pattern of distribution in 1966 was such that nearly 80 per cent of the dwellings and the population of Teesside was located in urban Teesside (see table 3.10). Much of the future pattern of distribution of dwellings is already known in a sense. The effects of the rehabilitation and redevelopment programmes are likely to be such that a total of 27,800 dwellings would be cleared but only about 4,600 new dwellings would be replaced on the cleared sites, making for a net displacement of 23,200 dwellings. On the other hand, land is already committed for the construction of 50,700 new dwellings. Therefore of the total estimated stock of 221,600 dwellings likely to be needed by 1991, the probable location of 173,100 is known. The effect of this would be for the number of dwellings in urban Teesside to remain constant but for a substantial increase in rural Teesside, especially at Nunthorpe and Marton.

3.63 It is rather more difficult to translate what this means into terms of population. The average occupancy rate of all dwellings in 1966 was about 3.2 persons per dwelling but with a range from 1.9 persons per dwelling in some of the oldest parts of Teesside rising to 4.3 persons in the relatively new local authority estates. In fact, the age of the dwelling was probably the most important factor influencing occupancy. Houses built before 1914 had 3.0 persons, on average; interwar houses had 3.2; and houses built since 1945 had 3.5 persons per dwelling. It has been assumed that the pattern will continue, giving the rates shown in table 3.11. This implies that average occupancy rates will fall, even though the average size of household might rise from about 3.24 to 3.31 persons. This is explained

Table 3.10. Distribution of housing and population, existing and committed changes ('000's)

dist/ct	population		number of dwellings			
	1958	1961 (X & C)	1958	overall (est)	committed	1958
1. Middlesbrough	168	132	48	11	2	37
2. Stockton	83	68	28	3	8	28
3. Thornaby	24	28	7	2	2	8
4. Billingham	36	40	11	1	3	12
5. Easington	45	42	12	4	4	14
6. Redcar	24	44	11	1	4	14
7. Nunthorpe-Merton	16	55	0	—	12	18
8. Eaglescliffe-Yarm	11	22	4	—	3	7
9. Billingham	3	9	1	—	—	1
10. Sedburgh	3	15	2	—	—	3
11. Saltburn-Marlke	14	26	5	—	4	8
12. Easington	22	28	7	1	3	5
13. Gillingham	12	25	4	—	3	5
14. Stockton	12	18	4	—	1	5
1-6 Urban Teesside	338	382	154	21	22	118
7-14 Rural Teesside	153	185	32	2	28	88
TOTAL (rounded)	491	567	186	23	51	176

Notes: population includes that in private households and in non-private households.

Dwelling and committed (X & C) is the population that is likely to be living on Teesside by 1961, making due allowance for the effects of the suburbanisation and redevelopment programme, the construction of new houses on committed land, and the likely changes in the average number of persons per dwelling.

by the higher proportion of houses that should be vacant in 1961.

Table 3.11. Percent occupancy rates, 1958 (all dwellings, occupied and vacant)

houses built before 1938	2.9 persons per dwelling
houses built 1938-1958	3.2 persons per dwelling
houses built after 1958	3.4 persons per dwelling

3.64 The effect of the commitment on the distribution of population is likely to be therefore for a fall in the population of Middlesbrough, a rise in that of Redcar and a stable level of population in the rest of urban Teesside. In rural Teesside, there will be large increases at Nunthorpe and Merton, Eaglescliffe and Yarm, Saltburn and Marlke and Gillingham. The net effect would thus be to create a more dispersed pattern of population distribution.

Income and expenditure

Personal income

3.65 Little information is available from published sources about income on Teesside but what there is suggests that they are similar to those in the Northern Region as a whole. Information is available for the Northern Region both from the Family Expenditure Survey of the Ministry of Labour and the Inland Revenue. It shows that income per income earner in the Northern Region is about 94 per cent of that in the United Kingdom whereas per capita income is only 85 per cent. Two reasons explain these differences. The first is the relatively low levels of investment income per income earner in contrast to earned income which is roughly the same as in the country as a whole. The second is the relative absence of certain classes of income earner, working wives, salary earners and people with income derived from investments. The trends are obvious, but indicate that the gap between per capita income on Teesside and in the country as a whole may have been tending to widen because of a more rapid growth in investment income in other parts of the country.

3.66 In forecasting per capita income, however, it has been assumed that this gap will not widen and that a

1 per cent rise in per capita income in the country would be accompanied by a similar rise on Teesside. The justification for this is that it would be consistent with the whole range of demographic and employment forecasts being made, that regional differentials are likely to be reduced. The forecasts also assume that a 3 per cent rise in Gross National Product would be paralleled by a 3 per cent rise in per capita income following the trends of 1960-65. The forecast is given in table 3.12.

Table 3.12. Per capita income, Teesside (1968 prices)

1958	£380 per annum
1970	£510 per annum
1981	£730 per annum

Personal expenditure

3.67 Patterns of per capita expenditure closely follow those of per capita income except that as income rises there is a less than proportionate rise in expenditure due to the higher incidence of taxation and savings. The pattern can most usefully be illustrated by comparing data between 1957 and 1964 (see table 3.13).

Table 3.13. Per capita expenditure, United Kingdom per cent of per capita income (at 1958 prices)

	1957-58	1964
convenience goods	37.7	38.1
durable goods	22.8	20.8
motor vehicles	3.9	6.1
public transport	2.8	2.5
meat and fish	1.1	0.7
miscellaneous recreation	8.0	9.1
housing	14.6	14.8
TOTAL	80.4	81.8

Note: definitions as in Family Expenditure Survey; miscellaneous recreation includes expenditure which is also included in convenience goods.

3.68 During this period certain types of expenditure become proportionately more important particularly expenditure on motor vehicles and on miscellaneous recreation. Expenditure on all other items fall as a proportion of income although the fall was greater for

convenience goods, public transport and mass entertainment. This change in patterns of expenditure is mainly a consequence of the absolute rise in income during this period and much less the result of any long-term trend. Thus the same changes are found if a comparison is made between patterns of expenditure amongst high and low income groups in any one year or between patterns in a low income area, such as the Northern Region, and in the rest of the country.

3.69 Forecasts of future per capita expenditure are therefore directly related to income forecasts by predicting the trend in the proportion of per capita income devoted to different categories of expenditure (see table 3.14). The rise in per capita expenditure is

Table 3.14. Forecasts of per capita expenditure, Teesside (£ per annum, 1988 prices)

	1988	1976	1991
convenience goods	118.0	143.7	165.4
discrete goods	75.3	102.7	159.6
sub-total retail	193.3	246.4	325.0
motor vehicles	17.6	26.0	66.2
public transport	10.2	12.6	19.0
mass entertainment	3.0	6.6	11.9
housing	62.0	82.1	123.2
personal services and miscellaneous	32.8	41.6	54.3
TOTAL, per capita expenditure	325.5	426.0	699.2
TOTAL, per capita income	350.0	610.0	796.0

Note: expenditure on convenience and discrete is weighted two years at the Centre of Distribution definition used in the analysis of shopping at Teesside.

expected to be 94 per cent by 1991 compared with a rate of 109 per cent in per capita income. The rise in retail expenditure, at 84 per cent, is low compared with many other items. This forecast is subject to many qualifications, principally, that a faster rise in Gross National Product, say of 3.5 per cent per annum, could result in a per capita expenditure of £730 on the same assumptions.

Distribution of family incomes on Teesside

3.70 Information was collected during the Home Interview Survey about earned family income (i.e. excluding investment and other sources of income). Their distribution is shown in table 3.15. The average

Table 3.15. Average weekly household income, 1988 (per cent of households)

less than £12	26
£12-17	18
£18-22	19
£23-27	53
£28-32	10
over £33	56

earned family income was about £19 per week. The geographical pattern showed a clear band of low income families in the older residential areas of Stockton, Thorneby, Middlesbrough and Eton, in the rural areas north of the river and in East Cleveland. The higher income areas lie south of Middlesbrough, especially in Nunthorpe, Merton and the newer southern part of Eton, and in the southwest suburbs of Stockton. Mathematical analysis of this data showed that incomes are most closely related with the age and size of dwelling, incidence of atmospheric pollution, and height above sea level. That is, a zone in which average family income is high is one which lies between 100 and 300 feet above sea level, is free from atmospheric

pollution and contains the newest and largest dwellings. The lowest incomes are found in the low-lying areas subject to atmospheric pollution, where dwellings are older.

3.71 It was possible to forecast the likely future pattern of family incomes using this equation for the recommended land use structure and its associated distribution of new dwellings. The results showed, in particular, that the southwestern area near Yarm and Kirkcubington was likely to become the highest income area, and that the small towns of Guisborough, Stokesley and Great Ayton were likely to see an above average rise in prosperity.

Travel behaviour

Car ownership

3.72 The level of vehicle ownership in Teesside was 12.7 private vehicles per 100 persons in 1966, a figure that was considerably lower than the average level for Great Britain, 17.0 cars per 100 persons, particularly as the latter figure excluded privately operated vans, which were included in the Teesside figures. The gap is to be explained mainly by the low level of family incomes on Teesside but also because Teesside is an urban area and, in general, car ownership levels tend to be lower in urban areas. Roughly, this level is the equivalent of one car for every two and a half households. The actual distribution of car ownership is given in table 3.16.

Table 3.16. Car ownership, Teesside, 1966 (per cent of households)

households without a car	63
households owning one car	33
households owning two or more cars	4

3.73 There was also considerable geographic variation in the level of ownership within Teesside, ranging from 5 vehicles per 100 persons in the densely built housing areas of central Teesside, where family incomes are low, to 35 vehicles in the suburban areas where family incomes are high and an average of 20 vehicles in the rural areas.

3.74 It is likely that the level of ownership will almost triple in twenty-five years, reaching 38 vehicles per 100 persons by 1991, although the geographic variation will continue to be great, ranging between 18 and 54 vehicles. The average forecast is slightly less than the figure predicted by J. C. Tanner for the future level of vehicle ownership in Great Britain, 39 vehicles per 100 persons. Tanner's figure is based on the idea of a 'saturation' level of car ownership, that is that the maximum level would be 40 vehicles per 100 persons assuming a 'moderately restrictive attitude to motoring'. The lower figure for Teesside reflects that it would still probably be a relatively low income area in 1991 even though the gap would have narrowed.

Trip behaviour

3.76 The average weekday volume of movement on Teesside in 1966 is given in table 3.17. Travel by rail is a very small proportion both of the total amount of travel (2.6 per cent), and of the travel by public transport (6.6 per cent) although it forms a greater proportion of external travel (12.6 per cent and 60.4 per cent respectively). The private vehicle too is relatively more important for external travel. But within Teesside, the

Table 3.12. Average weekday number of person-trips, Teesside, 1986 ('000's)

	by taxi	by bus	by private vehicle	total
wholly within Teesside in, and out of Teesside:	7.6	305.0	580.0	892.6
(a) by residents of Teesside	6.3	2.9	33.1	41.2
(b) by non-residents	0.5	6.4	46.4	53.3
passing through Teesside	0.8	0.2	6.4	7.4
TOTAL (rounded)	22.1	254.5	458.5	735.1

bus and the private vehicle are nearly of equal importance for daily travel. It is worth noting that only about 1 per cent of all travel passes through Teesside without stopping.

3.76 The trips made by the residents of Teesside may also be classified by their purpose and destination (see table 3.18). The proportion of travel on public

Table 3.18. Average weekday number of person-trips by Teesside residents, 1986 ('000's)

	to the inner areas of Middlesbrough, Sunderland and Thornaby		to other destinations	
purpose	number	% on public transport	number	% on public transport
home-to-work	81.4	62	242.2	65
home-to-other activities	34.9	63	204.5	32
other trips	32.7	33	85.8	23
TOTAL (rounded)	559.0	67	532.5	41

transport is at its highest for the journey to work and for trips made to the inner urban areas. The proportion of total trips that are made to these areas is 20 per cent; the areas account for 32 per cent of total employment. The proportion of the total public transport trips made to the central areas is 33 per cent.

3.77 However, the choice of mode between public transport and the private car, the so-called 'modal split', is much more influenced by car ownership than by the purpose or the destination of the trip. This reflects the greater propensity for car-owning households to make trips (see table 3.19).

Table 3.19. Car ownership and trip generation, Teesside, 1986

number of cars owned by household	average number of trips per day per household	% of trips made by public transport
0	3.3	77
1	7.2	26
2	11.0	13
3 or more	14.8	9

Future trip behaviour

3.78 It is likely that the weekday average number of person trips made in Teesside will have more than doubled by 1991. The forecast population increase of 47 per cent explains a large part of this increase in traffic. But in addition the rise in levels of car ownership will mean that the average number of trips made by each person will also increase from about 1.5 per day in 1986 to 2.1 in 1991. This is because the number of trips that are made from home to destinations other than work increases rapidly as car ownership rises. These mainly include trips made for shopping and leisure.

3.79 The choice of mode likely to be made by 1991 will also change because of the higher incidence of car

ownership. It is forecast that only 21 per cent of the total trips made by residents would be made by public transport in 1991 compared with 44 per cent at present although the actual number of trips would fall only slightly, from 320,700 a day in 1986 to 303,000 in 1991. The forecast volume of travel in 1991 is given in table 3.20.

Table 3.20. Average weekday number of person-trips by Teesside residents ('000's)

	1986		1991	
	total	% by public transport	total	% by public transport
home-to-work	302	55	448	31
home-to-other activities	289	42	784	17
other trips	122	38	309	13
TOTAL (rounded)	723	44	1,448	21

3.80 The fall in the relative use of public transport follows from the assumption that people will behave in 1991 much as they do today. The vital factor in this fall is the expected rise in car ownership. Two other factors are also important in the choice of mode: a the relative accessibility of public and private transport for any particular trip between two places. The relative accessibility of public transport incorporates a measure of the frequency of service and the likely time taken for the whole trip including that spent waiting to, and waiting at a bus stop, compared with the door-to-door time of the same journey made by private car.

b the placing of positive restrictions on the use of the private car, for instance by car parking policy in central areas or by road pricing mechanisms.

3.81 These latter two factors are discussed fully in chapter 5 but the main conclusions are that it would not be practicable to raise the relative accessibility of public transport to a point where it competes favourably with private transport over the whole of Teesside; and that policies of central area restriction would not significantly affect the average use of private transport over the whole of Teesside although they might have effect in specific areas. The forecast modal split of 21 per cent does in fact result from a policy of restricting the use of private transport in central Middlesbrough by means of a car parking policy. An important reason for this is the degree to which jobs and central area activities are dispersed through Teesside. The largest shopping centres and one of the biggest employment areas is central Middlesbrough. Yet, in 1986, it attracted only 15 per cent of the average daily number of person trips made by the residents of Teesside. It would thus be very difficult, even if it were desirable, to influence the future modal split to a degree where it could be significantly higher than 21 per cent by public transport. Stringent car parking policies or other means of restraint on the use of the private car, could probably be applied only in the central area of Middlesbrough and this would have less than 2 per cent effect on the average modal split for the whole of Teesside.

3.82 The other factor that might influence the use made of public transport is the form of land use policy that is finally recommended for Teesside. However, the question must await more extended consideration in chapter 6 of the aims of planning policy and an evaluation of alternative strategies for development. At this stage, the main implications are that total travel is likely to have more than doubled by 1991 and there is likely to be a substantial drop in the proportion of this

travel that would be made by public transport, although the total volume of travel by public transport would not decrease substantially.

Vehicle occupancy

3.23 It is necessary to translate these estimates of the future amount of travel in terms of the average weekday number of person-trips into the numbers of vehicles that would be involved. The average numbers of people travelling in each private vehicle in 1966 were found to be those shown in table 3.21. These factors have been assumed to apply in 1991.

Table 3.21. Vehicle occupancy, Teesside, 1966
(persons per private vehicle)

home-to-work	1.6
home-to-other activities	1.8
other trips	1.2
average	1.5

3.24 The loading factor for public transport was an average of twenty persons per bus. This loading factor is influenced by the number of people wishing to travel by public transport which in turn is influenced by the frequency of the service. For instance the loading factor on a particular route could be increased by reducing the frequency of service from every fifteen minutes to every 30 minutes. But the poorer service should deter

some people from using the service as the loading factor would not necessarily rise in proportion. It is assumed this order of load factor will continue to be necessary in 1991 if there is to be a viable public transport service.

The transport system

The road system

3.25 The road network used in the analysis of Teesside contains 407 miles (see figures 3.7 and 3.8). Most of the system, which includes all the classified roads in the area, consists of single carriageway roads, occasionally being used as these of four lane roads. The extent of dual carriageway in 1966 was limited, the only major stretches being from Portrack roundabout north of Newport Bridge to just south of Wobaston on the A19, and the A1066 from Middlesbrough to Redcar.

3.26 The river Tees, which is the main barrier to movement, is crossed by four bridges within the survey area. They are listed in table 3.22. Both the Transporter

Table 3.22. Average weekday traffic, over Tees bridges, 1966 (vehicles per day)

Transporter bridge, Middlesbrough	2,600
Newport bridge, Middlesbrough	27,000
Vicarage bridge, Stockton	26,000
Tees bridge	11,000

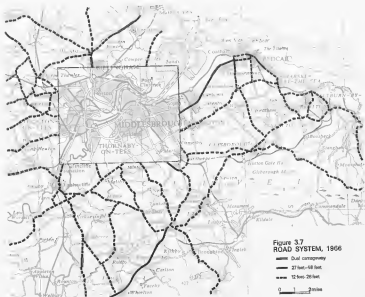


Figure 3.7
ROAD SYSTEM, 1966

— Dual carriageway
— 27 feet-66 feet
... 12 feet-26 feet
0 1 2 miles

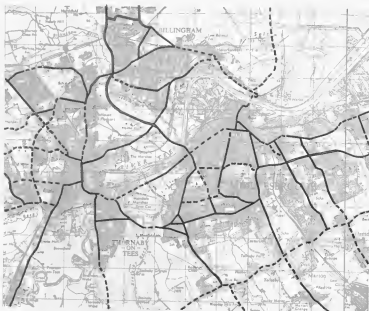


Figure 3.8
ROAD SYSTEM 1966
Central Teesside

— Dual carriageway

- - - 27-48 feet

... 12-26 feet

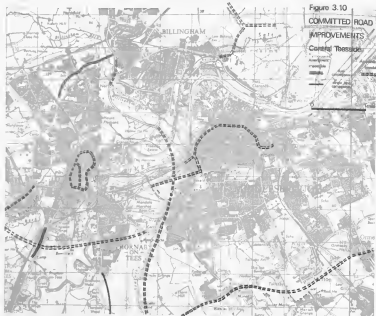
0 1 mile



Figure 3.9
COMMITTED ROAD IMPROVEMENTS



Figure 3.10



and the Newport Bridge, which is a lifting bridge, are able to open to give clearances of 160 and 120 feet respectively on the river Tees to permit the passage of vessels upstream. In future, however, it will only be necessary to have a clearance of 80 feet upstream from and including the Newport Bridge, following the closure of Stockton quay. Current navigation requirements make necessary a clearance of 160 feet downstream from the Transporter Bridge.

3.87 Schemes for road improvements are in hand or committed for 68 miles of this system (see figures 3.9 and 3.10) mainly providing dual carriageways for the more important classified roads. These schemes included 31 miles of improvements for which designs were so far advanced as to prevent the possibility of any amendment. The remaining 37 miles of improvements are at varying degrees of commitment where it would still be possible to change the design or the precise alignment of the scheme if the predictions of future traffic volumes show that a road to a different capacity would be required.

3.88 In this latter category are most of the schemes referred to in the North East White Paper and mentioned in chapter 2, including the proposed South Teesside Parkway (A1044-A174), and the northern route to Middlesbrough central area (the realigned A66). The realignment of the A10 to a new crossing of the river Tees to the west of Newport Bridge is in a slightly different category. Recommendations for the alignment

of this road were made in a report to the Ministry of Transport by Dobbs Sandford Fawcett & Partners, Consulting Engineers, in 1965. They are now preparing a design for this road between Crathorne on the existing A19 and Portrack roundabout.

Traffic volumes 1966

3.89 The average daily weekday volume of traffic in 1966 is shown in figures 3.11 and 3.12. The geographical pattern is clear from the diagrams with much the heavier flows being in urban Teesside where many of the principal routes carry between 10,000 and 20,000 vehicles per day, reaching a peak of 29,000 at the Victoria Bridge between Stockton and Thornaby. Flows in the rural areas are much lighter, except for the A66 to Darlington which carries 8,000 vehicles a day.

3.90 There is little seasonal variation in most of this traffic, except for the roads to the coast and Whitby. On Victoria Bridge the variation is such that traffic rises in July to 14 per cent above, and drops in October to 14 per cent below the annual average. On the moors road to Whitby (A171) however traffic in July is 33 per cent above the annual average.

3.91 A similar pattern of variation was found too in the daily volumes of traffic. The peak day within the urban area is usually Friday when the average flow is 13 per cent higher than for the week as a whole, and the lowest day, Sunday, with only 54 per cent of the average daily



Figure 3.11
TRAFFIC FLOWS, 1966





Figure 3.12
TRAFFIC FLOWS,
1966
Central Teeside



0 1 mile

flow. But the pattern is reversed in the recreation areas, and traffic on the Whitby road on a Sunday in summer is as much as 8,400 vehicles per day, that is 120 per cent higher than the average daily flow throughout the twelve months.

3.92 The third variation is the hourly flow of traffic. The variation in the peak hour flow, expressed as a percentage of the total daily flow, depends on the proportion of traffic that is for the journey to work. The average peak hour flow on Teesside is about 9 per cent of the total but it rises to a maximum of 20 per cent. The division between the two directions of flow during the peak hour also depends on the importance of home-to-work journeys. On roads leading directly to the main centres of employment, over 90 per cent of the peak hour flow will be in one direction. On roads such as Victoria Bridge, Stockton, there is virtually no excess of flow in one direction. The average situation for Teesside is typified by the peak hour flow on the A19 at Billingham Bottoms, where 64 per cent of the traffic flows in one direction, 36 per cent in the other. These figures relate to the actual peak hour; the directional imbalance, or tidal flow of traffic, may be substantially greater for shorter periods during the peak hour.

Performance of the road system

3.93 The ability of the road system to cater for people wishing to use it is most easily measured by the

average journey speeds of traffic on different parts of the system. The capacity of the system is determined largely by that of the road junctions. The level of service can vary between a complete free flow of traffic with no delays to individual vehicles to a situation where average daily flows are so great, and the capacity of the system so poorly matched to these flows, that periodic and severe delays are encountered by all vehicles.

3.94 Between these two extremes lies the practical situation in which the average journey speed of traffic in highly built up areas or in suburban and rural areas would be of the order of 15 and 30 miles per hour respectively. Lower average speeds in peak hour conditions could reasonably be tolerated, of the order of 10 miles per hour. Average speeds less than this are clearly unsatisfactory but in fact these conditions were found on Teesside in 1966 only on three miles of road mainly at Newport Bridge and the approaches to Stockton central area. (See table 3.23 and figures 3.13 and 3.14).

Table 3.23. Performance of the road system, 1966

average journey speed (m.p.h.)	equivalent peak hour speed (m.p.h.)	number of miles of principal roads
less than 10	less than 6.5	3
10.0-19.0	6.5-14.0	8
19.1-30.0	14.1-28.0	180
over 30	over 28	178

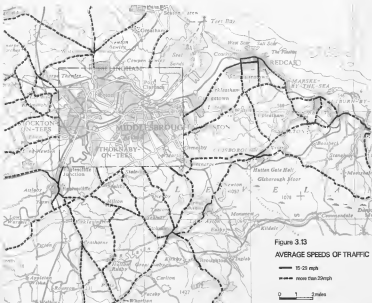


Figure 3.13
AVERAGE SPEEDS OF TRAFFIC

— 15-29 mph
- - - more than 30 mph
0 1 2 miles

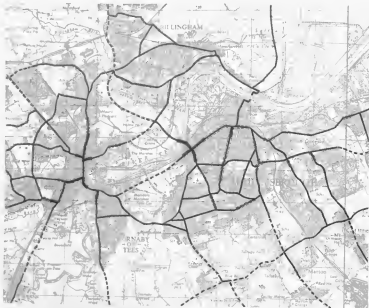


Figure 3.14
AVERAGE SPEEDS
OF TRAFFIC
Central Teesside



3.96 These average journey speeds may reasonably be applied only to the primary and some parts of the secondary road system on both of which the movement of traffic must receive priority. But on the local distributor and service roads, environmental considerations and ease of access to the adjacent development will mean that average journey speeds are likely to be lower but without a corresponding increase in traffic volumes. That is, there should be a clear distinction between the function and character of the different parts of the road system, a situation which is virtually unattained on Teesside in 1966.

3.97 The main concentrations of parked vehicles in 1966 were at the central areas of Middlesbrough and Stockton. Elsewhere parking is mainly to be found at the main centres of employment where private arrangements are made. Both central areas had the same pattern of behaviour. Roughly 80 per cent of the total number of vehicles parked during the day were there for about 1 hour, the rest being longer term parkers staying for an average of 4 hours. The maximum number of vehicles parked at any one time was thus 2,300 in the central area of Middlesbrough and 1,000 in Stockton central area. In each the parking was either on-street or on waste land; neither centre had a significant amount of permanent off-street parking.

Public transport by road

3.98 Bus services were provided by the following companies (see table 3.24). In addition, special services

Table 3.24. Bus services on Teesside, 1966

company	average weekly passengers with in Teesside	number of routes within survey area	
		buses	within survey area
United Automobile	584,000	200	820
Middlesbrough Corporation	798,000	100	112
Stockton Corporation	710,000	103	88
Teesside Railless Traction Board	204,000	40	23
Others	50,000	30	100

were provided to many of the main centres of employment to transport workers.

3.99 The usage of the bus services has been dropping steadily. Thus, in 1960, three of the services carried an average of 1,300,000 passengers weekly, compared with 1,714,000 in 1966 though the decline has not been uniform over the whole area (see table 3.25).

Table 3.25. Average number of passengers per week by main Teesside Bus operators ('000's)

	Middlesbrough Corporation	Stockton Corporation	Teesside Railless Traction Board	Total
1959-60	855	821	208	1,884
1960-61	887	804	210	1,901
1961-62	896	800	207	1,903
1962-63	905	780	200	1,885
1963-64	896	783	201	1,880
1964-65	879	789	208	1,876
1965-66	797	793	207	1,797

3.99 The reason for the decline is partly a consequence of the rise in car ownership and of the greater convenience of making journeys by car. The average scheduled journey speed for all bus services is of the order of sixteen miles per hour which is substantially less than that achieved by private transport; and this difference makes no allowance for the loss of time in waiting for a bus or for changing routes. This loss of time, and slower journey speed compared with journeys by private car, is partly offset by the relative costs involved. The average cost per passenger mile to the passenger is of the order of 2.5d. compared with an average to the car passenger or driver of the order of 2.8d. per mile, taking into account petrol, oil, tyres and maintenance costs, or 6d. per mile when depreciation and other fixed costs are also included.

3.100 Within this general picture whereby 42 per cent of the total person-trips by the residents of Teesside were made by bus, certain types of service and certain routes appear to be more highly used. These include services to the outlying villages and the central areas of Stockton and Middlesbrough. A change which may affect this situation is that three of the companies (Middlesbrough and Stockton Corporations, and the Teesside Railless Traction Board) are to be amalgamated on April 1st, 1968, on the inception of the new Teesside County Borough.

Goods movement by road

3.101 Nearly one-third of the average weekday number of vehicle trips made on Teesside in 1966 was made by goods vehicles (see table 3.26). Most of these

Table 3.26. Average weekday number of vehicle trips, 1966 ('000's)

	all vehicles	% by goods vehicles
trips within Teesside	356	26
trips in and out of Teesside	58	26
trips passing through Teesside	7	38
TOTAL (rounded)	364	27

trips were made by the 11,000 goods vehicles which were based and operated on Teesside. It is probable that the size of this fleet will double, rising to 24,000 by 1981, with a comparable increase in the average daily number of trips by goods vehicles to 216,000.

The rail system

3.102 A very small amount, less than 8,000 passengers per day, of the total movement of people within Teesside is carried by rail. Of these, virtually all are carried by the half-hourly service from Selburn to Darlington via Middlesbrough; most of the remainder use the hourly service from Middlesbrough to Hartlepool, Sunderland and Newcastle, via Stockton and Billingham. A very small amount of traffic is carried by the third rail passenger service in the area, the line from Middlesbrough to Whitby, via Nunthorpe, Great Ayton and Kildale. This latter line was kept open to provide a service to the villages along its line through the North York Moors, following a public inquiry, and a decision by the Ministry of Transport.

3.103 Rail passenger services to the rest of the country are via the connecting service to Darlington and direct to the south via Northallerton and York. It is possible that a new rail passenger station will be built near Eagles-

cliffe to serve as the main passenger station for national services to Teesside with other stations providing only local, connecting services to Darlington, Newcastle (via the coast) and Whitby.

3.104 It is in the movement of freight that the Teesside rail system plays its biggest role. A large proportion of the total tonnage of goods on Teesside is moved by rail, either between different works, or from the Durham coalfield via Billingham (coal) or from the steel and chemical works to other parts of the country. To meet this need, there is a large modernised marshalling yard between Thorneby and Middlesbrough as well as goods yards at Stockton, Middlesbrough, and many of the works on the south bank of the Tees. Apart from these services, a liner train depot is being provided on a site northeast of Stockton.

The river Tees

3.105 The amount of sea borne trade passing through the river Tees was 5.6 million tons in 1966. Its character, is shown in table 3.27. That is, only a very small part

Table 3.27. Total trade through river Tees, 1966 (million tons)

	imports	exports
Iron ore	3.67	—
oil and petrol	3.35	0.23
products for heavy industries	0.54	1.74
other cargo	0.03	0.06
TOTAL	7.59	2.03

of the total trade of the river Tees is not connected with the chemical or iron and steel industries of Teesside.

As a result of this, the facilities on the river Tees include wharves in the ownership of industrial firms as well as public docks (see table 3.28).

Table 3.28. Proportion of total trade passing through river Tees, 1966 (per cent by tonnage)

Industrial wharves	67
Tees and Hartlepool Port Authority	—
Tees Dock No. 1 quay	4
Transport of Jingles	16
Middlesbrough Dock	6
others:	—
Stockton Corporation Quay	1
Type-Tees Wharves	5
TOTAL (rounded)	100

3.106 The future development of shipping on the river Tees is controlled mainly by the improvements currently being made to the main navigation channel permitting ships of 66,000 tons to use Tees Dock. At present, Tees Dock itself is the only entirely new deep water general cargo dock on the river; it has five berths. A second quay to give four more berths is planned at a cost of about £5 million. The nine berths at Tees Dock would then enable trade to be transferred from Middlesbrough Dock which is more than a hundred years old and increasingly difficult to operate. The Interim Port Development Plan of the National Ports Council (1965) implies that Middlesbrough Dock could be surplus to requirement in about ten years.

3.107 A report by the Ministry of Transport giving the reasons for the Minister's decision not to authorise the construction of a new dock at Portbury, Bristol (H.M.S.O., 1966) contains some crude forecasts of the likely volume of trade in the river Tees excluding oil and iron ore. This shows that exports might increase

by 84 per cent, and imports by 55 per cent by 1980. It is necessary therefore to consider how additional docks could be provided. Virtually all the river frontage land on the north bank is either under development or scheduled for early projects by the respective owners including the possibility of further deepwater industrial wharves at Smea Sands. While Tees Dock reaches capacity working for all nine berths facilities would have to be located on Seal Sands. Road and rail access to any new docks would probably pass north of Philipson Railway. The provision of rail access would be vital as more than 75 per cent of the exports through the various public docks is brought by rail.

3.108 In these circumstances the river Tees would have to be fully navigable for shipping purposes upstream probably only as far as the ICI wharves at Billingham Reach. Stockton Quay will close and the only other use upstream would be that by Reed Wrightson & Co. Ltd., who use the river for transporting bulky products from their works at Thorneby. The lowest fixed bridging point therefore is that committed for the realignment of the A18. The clearance on this would have to be 60 feet and the clearance for any fixed bridge further downstream would have to be 100 feet.

Teeside Airport

3.109 The former R.A.F. station at Middleton St. George was taken over by a group of local authorities in 1964 and is now a civil airport. The longest of the four runways is 7,500 feet long and the airport is capable of handling all types of aircraft including transatlantic flights. The airport, which has a good meteorological record, has been designed to cater for 350,000 passengers a year and the opportunities for expanding freight traffic are very good. So far traffic is small with few scheduled services, partly because of competition from Newcastle and Leeds. Nevertheless, 85,000 passengers passed through the airport in 1965. Freight, amounting to 250 tons was carried in 1965 and the tonnage approximately doubled in 1966.

Shopping

3.110 The retail trade can be divided into 'convenience' and 'durable' goods for the purposes of analysis by grouping together trading groups from the Census of Distribution 1961 as follows:

a convenience goods are those sold in the first three groups of the Census, namely groceries; other food shops; and confectionaries, newspapers and tobacco-stalls;

b durable goods are those sold in the last four groups, namely, clothing and footwear shops; household goods shops; other non-food retailers; and general (i.e. variety and department) stores.

This definition is generalised. It excludes sales through other types of outlet, including restaurants and public houses and non-traditional forms of retail trade such as mail order or automatic vending, and service trades such as bakers. It is noted too that food may be sold either in convenience or more rarely in certain types of durable goods shops. But it has the advantage of simplicity, strong contrasts and readily available data.

Shopping, 1966

3.111 Teeside in 1966 had three different levels of shopping (see table 3.23). They included:

a the two main shopping centres of Stockton and Middlesbrough;

b a series of district shopping centres including Redcar; Billingham Town Centre; Gillingham; South Bank; North Garesborough; Lanthorpe; Mardale Road; Thorneby; Newport Road; Capheaton Road and Parkers Road, Middlesbrough; Yarm Lane, Stockton;

c purely local shopping facilities including isolated and corner shops and small groups roughly of less than thirty shops.

Table 3.23. The hierarchy of shopping centres, 1966

	main centres	district centres	local shops
per capita expenditure (£ per annum)			
convenience goods	30	35	62
durable goods	58	18	4
average sales per centre (£ million per annum)	15.1	2.8	—
range of sales per centre (£ million per annum)	10.7-23.6	1.5-8.0	—
average proportion of sales in durable goods (%)	74	30	14
range of proportion of sales in durable goods (%)	73-74	17-35	—
mean length of shopping trip (minutes)	18	13	8
mean expenditure per shopping trip (£)	5	3	1

3.112 The first striking feature is that the hinterlands of the two main centres are mutually exclusive but cover the whole of Teeside (see figure 3.16). People from every part of Teeside tend to shop at least occasionally either at Stockton or at Middlesbrough, though not at both. Also very few people on Teeside leave the area to do any shopping elsewhere and its shopping centres attract very few shoppers from outside. That is, Teeside comprises two distinct market areas, one (Stockton) with a population of 160,000 in its hinterland, the other (Middlesbrough) with a population of 320,000. There is some slight overlap between these market areas in Billingham.

3.113 The failure of one of the two centres to become dominant can probably be attributed to two factors apart from their historic differences. First, the average shopping trip on Teeside is short, at least ten to twenty minutes, which means that neither centre is easily accessible from the whole of Teeside (see figure 3.16). Second, neither centre is markedly more attractive than the other; both offer much the same variety of shops and services. Middlesbrough has a slightly greater choice of shops but Stockton has its twice weekly retail market. Both centres are in need of renewal and plans are far advanced in both for the first schemes for comprehensive redevelopment.

3.114 The district centres fulfil an intermediate role serving hinterlands of about 50,000 people. Those of Gillingham and Redcar are particularly important. Billingham has a new centre, nearly completed, that follows the principles of traffic segregation, has a considerable provision for car parking and has a range of other facilities including a good hotel, a sports forum and offices. It is clear that Billingham has had considerable success in attracting trade from the two main centres but there has been little or no decline in expenditure by local residents in the smaller groups of shops in old Billingham, Haverton Hill and other places. Nevertheless the hinterland of Billingham's new centre is virtually confined to the boundaries of the



Figure 3.15
TRAVEL TIMES FROM
MIDDLESBROUGH

Residential Travel time measured
Industrial in minutes
Main Roads

urban district. The centre at Redcar has a different role. It is a holiday centre with a beach front and related activities though on a small scale, its hinterland is more extensive than that of Billingham; and it dominates its hinterland much more completely than does Billingham. Nonetheless it remains a district centre within the larger hinterland of Middlesbrough. The other district centres are smaller with a greater dependence on convenience goods. Many are in areas likely to lose population because of redevelopment and rehabilitation.

3.115 Local shopping facilities are varied but their trade is overwhelmingly in convenience goods and they rely on shopping trips made on foot for which the average journey length is about eight minutes. In the older areas the pattern is for a widely dispersed scatter of corner shops most of which are small and many of which are probably uneconomic. In the new areas the tendency has been for small shopping centres, which can draw on a large population by their range and choice of shops and can thus sustain the newer, larger forms of retailing such as supermarkets.

Shopping policy

3.116 The main weakness of this pattern is that Teesside has two centres equipped to serve populations of 180,000 and 320,000 rather than a single centre which has the facilities capable of attracting and serving a population of 500,000; that is, the quality and range of services available within Teesside are comparatively poor for a combination of this size. The report, *National Shopping Studies in North West England*, prepared by the Department of Town and Country Planning,

University of Manchester (1964), showed that most of that region was within 40 minutes travelling time of Liverpool or Manchester, the two regional shopping centres. The characteristics of these two centres were that they had annual sales in excess of about £80 million in 1956 and that more than 50 per cent of this trade was in durable goods. These were indicators of a range of variety of choice of shopping, commercial and cultural facilities that can be matched in North East England only by Newcastle upon Tyne which is more than 60 minutes travelling time away from Teesside.

3.117 It is clear that Teesside is unlikely to be able to achieve a comparable status to that of Newcastle as it lacks a population of equivalent size. But the relative isolation of Teesside means that the only other method of giving an improved level of service would be to foster the growth of one or the other of these two centres into a dominant regional shopping centre for Teesside. According to the criteria set out in the study of North West England, this would mean that Middlesbrough, for instance, would have had an annual level of sales of about £32 million in 1956. It would then have served Teesside as a whole and probably have had a structure of sales more truly indicative of the specialised role of a regional centre.

3.118 In fact North Middlesbrough could be the only feasible location for such a centre on Teesside. It is the largest existing centre on Teesside by a considerable margin and is likely to remain so whatever happens for many years. It has space for expansion which does not exist at Stockton and which would enable the evolution of an efficient system of land use and circulation; this is demonstrated more fully in chapter 6. Accessibility

to central Middlesbrough will be markedly improved within ten years by converted schemes for roads, particularly the realignment of the A18 and the construction of a section of the A66 linking central Middlesbrough with the new A18. Finally, a lead was given for planning policy in the North East White Paper which stated that 'the promotion at Middlesbrough of central development to act as a social and commercial focus for the whole conurbation' should be an important feature of planning for Teesside.

3.118 A further weakness in the existing shopping pattern of Teesside is the relative poverty of district shopping facilities. Stockton, in particular, attracts a very high proportion of the total trade generated by the population living in its hinterland except where it is losing trade to Billingham. The absence of district shopping centres elsewhere in the hinterland of Stockton does not deprive its population seriously as they all live close to the centre. But the poverty of district centres in Middlesbrough's hinterland is more serious because of the greater distances involved in getting to the central area. In particular, the areas committed for residential development on the coast and in the Nunthorpe-Marion area will have a growth of population of sufficient size to make the provision of district centres desirable.

Shopping floor space

3.120 This policy is best translated into a policy for planning by means of the estimated demand for

shopping floor space (including selling and storage space together). At present sales per square foot tend to be very low on Teesside. The processes of redevelopment, the construction of new shops and the extended use of improved retailing methods will serve to increase the figures of sales per square foot. The pressure for such improvements would come from the very considerable increases in the total volume of trade generated by the growth in population and its greater prosperity.

3.121 At present the average sales per square foot on Teesside is about £18.6, though it varies considerably, being higher in the new centres, and in convenience goods, and lower in durable goods. The future average levels could rise to between £21 and £29 by 1976, and £25 to £32 by 1991 (at 1966 prices). Probably, however, the most rapid rates of forecast give a more reliable indication of the rate of increase as they give the minimum total demand for floor space for which provision should be made. Thus the increase in sales per square foot is likely to be of the order of 70 per cent during the next twenty-five years. But total retail expenditure is likely to increase by about 160 per cent because of the compound effects of the increase in population and the increase in per capita expenditure. At present Teesside has about 5.1 million square feet of shopping floor space, and an additional 3.5 million square feet are likely to be required during the next twenty-five years.

3.122 The following tentative points can be made at this stage:



a floor space at Middlesbrough should rise from about 1.2 million square feet at the present time to 2.6 million square feet if it is to attain the status of a specialised regional shopping centre serving the whole of Teesside, but it must be possible to demonstrate that the provision is likely to be commercially viable;

b floor space at Stockton should rise from about 0.8 to 1.1 million square feet if it is to retain its role as a main shopping centre for west Teesside and if it is not to jeopardise the chances of success for Middlesbrough. There is a scheme proposed for the comprehensive redevelopment of part of Stockton central area which could lead to a greater amount of floor space in Stockton than might be desirable. It is difficult to be more precise at this stage as the question is one of phasing. The scheme does not necessarily add to the total provision required by 1991 but it could well add to the actual total provision in 1976;

c schemes are in hand for the completion of the town centre of Billingham (providing for 213,000 square feet), and the construction of a town centre at Thorneby (286,000 square feet). There are indications that the centres may then be too large in the sense that they may, in the short run, attract considerable trade from Stockton and Middlesbrough but their construction is too far advanced for changes to be made;

d a planning report for Redcar by Development Analysts Ltd. has proposed that its floor space should be extended from its present amount of about 230,000 to 400,000 square feet. This has been accepted as a reasonable commitment;

e additional provision should be made for district centres to serve the areas of committed and proposed development using, as a first indication, a compact hinterland with a population of about 50,000 and a floor space of between 50,000 and 100,000 square feet. These should be either completely new or based on existing, smaller shopping centres. This could mean perhaps five new centres to provide for new development and the expansion of smaller shopping centres especially on the coast and south of Middlesbrough or Easington;

f the decline of population consequent upon the redevelopment or rehabilitation of older residential areas is likely to mean that district centres such as those at North Ormesby, South Berke, Grengetown, Mandale Road, Thorneby, and the shopping streets near Middlesbrough and Stockton are likely to see a fall in their trade and therefore, at best, a much smaller amount of floor space would be required on redevelopment;

g local shopping needs could probably be satisfied by the provision of roughly three square feet per person in new residential areas located in small centres of not more than about 20,000 square feet and serving a hinterland of between 7,000 and 10,000 people. This would satisfy the criteria of making such centres accessible on foot.

3.123 The final definition of a policy for shopping is given in chapter 6, paragraph 6.16 after a mathematical evaluation has been made of the implications of alternative patterns for the distribution of floor space. These patterns are related to the recommended distribution of population in the urban structure.

Civic and institutional uses

Local government

3.124 The administrative offices of the new Teesside County Borough are likely to remain decentralised in part for some time if only because of the availability of new local authority offices at Stockton, Billingham and

Easington and older offices at Redcar, Thorneby and Middlesbrough. Nevertheless Middlesbrough should be the administrative centre as it has the largest and most complete set of offices and halls and because it should develop into the regional centre for Teesside.

Teesside University

3.125 The suggestion that Teesside should have a technological university figured largely in the specific proposals made by the Northern Economic Planning Council in *Challenge of the Changing North*. In the event, however, the Government have decided that there is no chance of launching a major new institution on Teesside in the years immediately ahead. The proposal must be deferred until it is possible to consider the case for additional universities. Nevertheless it is important to consider the possible locations for such a university on Teesside in order that a good site can be reserved for that use in an area where any delay in implementing the scheme will not have harmful effects.

3.126 The Teesside University Promotion Committee have described the requirements for such an institution. Probably 500 acres of land would be needed to give opportunities for flexibility in design for perhaps 5,000 students initially and for subsequent growth in a location easily accessible to the rest of Teesside including the main technological based industries of the area. A university gives the possibility of creating an attractive group of buildings which would be of great importance for the image of Teesside.

3.127 Fourteen sites had been suggested by the various local authorities. The site finally suggested by Teesside Survey & Plan and accepted in principle by the Teesside University Promotion Committee is located at Ormesby Bank (see figure 3.17). The site, which is 780 acres, contains two strongly contrasted sections. That south of the main road to Gileborough (A171) is flat. The remainder, north of the Gileborough Road, comprises a shoulder of the Easington Hills rising to a prominent cluster of minor peaks 500 feet above sea level. Both sides of this hill, between the proposed South Teesside Parkway and the Gileborough Road and east of the Stokesley Road (A172), should form part of the site. The hill is visible from most of urban Teesside which is spread like a map to the north; and to the south the Cleveland Hills rise dramatically from the agricultural plain. No other site on Teesside offers a comparable prospect. The university buildings would need to occupy only part of the area, the details being dependent on considerations of land form, tree cover and the location of abandoned, overgrown mine workings. The remainder would be a reserve which could either continue in agricultural use or become public open space.

Teesside Polytechnic

3.128 The proposal for a Polytechnic at Middlesbrough to serve the whole of Teesside was contained in the White Paper on Higher Education (Cmd. 3006, H.M.S.O., 1965). The Polytechnic would include the existing Constantine College of Technology at Middlesbrough and would have at least 2,000 full-time and 2,000 part-time students. It would require new teaching and administrative buildings and hostels at an estimated cost of about £5 million. Work on the first hostel is to start in 1968.

3.129 The Polytechnic and its hostels should be located south of the existing buildings of Constantine

College thus acting as a link between Middlesbrough central area and Albert Park, a Victorian town park half a mile to the south (see chapter 8). This would give the opportunity for the redevelopment of an area of poor quality housing with buildings and uses which could add scale and variety to the environment of the regional centre for Teesside. It would stimulate demand for a variety of commercial, cultural and recreational activities and would be easily accessible for staff and students. This proposal would require the clearance of 600 dwellings for whose replacement land would have to be found elsewhere and whose demolition might have to take place several years earlier than may otherwise have been necessary. This proposal was accepted by Middlesbrough Corporation.

Secondary and further education

3.130 Provision for secondary education in the urban structure policy partly depends on the education policy yet to be adopted by the new Teesside County Borough Council. At present, education is administered by Middlesbrough, County Durham, the North Riding and Stockton. Middlesbrough has formulated and has approved its policy for comprehensive education and a roughly similar policy is being followed by Stockton. Education policy for the rest of the area has not yet been settled. It is easier to be definite about a land use policy for education. Middlesbrough is following a policy of concentrating all secondary education at four school bases. These are located at the south end of the county

borough and it is intended that schools in the northern part of the county borough would eventually cease to operate as secondary schools. The school bases vary between 30 and 100 acres, with an average size of 70 acres. The largest could accommodate about 6,000 pupils in a variety of types of schools sharing common facilities such as the sports hall and theatre proposed for the Acklam High School Base. School bases have been planned for Thornaby and Billingham.

3.131 The school base concept appears to have four advantages for planning: it enables maximum flexibility in the use of buildings and in varying the form of education provided; it enables the provision of special facilities in a convenient and economic manner that would not be possible with a dispersed pattern of small school sites; it permits the full integration of the school bases with their extensive playing fields into an important and attractive part of the urban open space system; and it makes possible an efficient use of transport facilities.

3.132 Accordingly, this concept should be extended to provide for the further long term growth. In general the existing proposals for secondary education will provide sufficient accommodation for most of the growth in population on land committed for residential development except south of Middlesbrough. It seems likely that a further five school bases might be required including that already partly committed at Nunthorpe, each serving about 30,000 to 50,000 population; these would be to serve the additional population growth for which land has not yet been proposed.

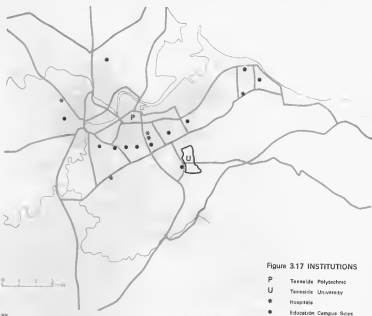


Figure 3.17 INSTITUTIONS

- P Teesside Polytechnic
- U Teesside University
- * Hospitals
- Education Campus Sites

3.133 Further education apart from the Polytechnic and the University is catered for by a series of technical colleges at Billingham, Stockton, Middlesbrough and Redcar; by a teachers' training college; and by a college of art. There are proposals for teachers' training colleges at Middleton St. George, using the buildings of the former R.A.F. station, and in the vicinity of Qmeesby. Probably only one more full-time technical college will be required. It should be located in association with areas of future residential development.

Hospitals

3.134 Teesside is served at present by twenty-three general hospitals and two mental hospitals. Most of the general hospitals are small. The Ministry of Health, in its *Hospital Building Programme of 1966* made it clear that the future trend is to have larger hospitals serving a large catchment area. The intention of the North and South Tees Hospital Management Committee is to concentrate their facilities at one capital hospital, providing specialised services and three district general hospitals (see figure 3.17). The former is to be built in the ground of St. Luke's mental hospital at Middlesbrough. A first district hospital is under construction at Durham Road, Stockton. The other two are proposed for Kildalethorn and, later, near Hemlington. In addition, the mental hospitals at St. Luke's, Middlesbrough, and at Sedgefield will remain in use.

3.135 These four hospitals will create concentrations of traffic and employment near areas otherwise residential in character. Like the secondary school bases, they have to be well located in relation to the primary road system. The four proposed sites meet this requirement fairly well.

Recreation and open spaces

Leisure activities

3.136 The pattern of leisure activities on Teesside in 1966 was examined in a number of surveys. One, the Home Interview Survey, showed the level of participation in these activities and the general pattern is clear although the results were taken from a very small survey and should be treated with caution (see table 3.30).

Table 3.30. Proportion of total population engaging in leisure activities, 1966 (per cent)

active outdoor recreation	1.0
passive outdoor recreation	4.2
indoor active recreation	6.9
cultural activities	1.2
visiting clubs, public houses and churches	16.1
social visiting	13.7
unspecified	7.5

3.137 The pattern varies from day to day with a higher level at weekends and a lower level on weekdays. But the average daily level of participation does not vary greatly between summer and winter, though the pattern changes with more participation in outdoor activities in the summer. The most striking feature is the low level of participation in all forms of leisure outside school and home. Strictly, only the last three types of activity proved to be measurable by this method and none of them is of great relevance for urban structure planning. There is clear evidence from many national sources that the demand for certain types of activity, such as swimming, team games, walking and camping, is relatively constant in relation to population. However,

the demand for activities requiring more time or cost is rising more rapidly, especially activities such as sailing, golf, canoeing, and driving for pleasure.

Urban open spaces and recreation

3.138 The main provision for leisure activities affecting urban structure planning will be the large space uses, such as parks, playing fields and golf courses; the large traffic generators, such as sports centres; and the areas for amenity and nature conservation in the countryside that were described earlier in this chapter.

3.139 Parks, playing fields and golf courses should be located throughout urban Teesside as part of an open space system linked, where possible, by pedestrian green ways. The quantities of land likely to be needed by 1991 for playing fields and golf courses can be forecast by relating them to surveys of the existing provision, trends in the levels of participation, and the growth in population. These show that 1,000 acres would be needed for public playing fields in addition to the existing 480 acres; and an additional 1,600 acres for golf courses. The additional playing fields would more than double the standard from its present level of one acre per 1,000 population. This order of growth is likely to be sufficient in view of the considerable area of private workers' playing fields and provided that there is some use by the public of schools' playing fields. The public playing fields should be widely distributed as groups of not more than 25 acres.

3.140 The quantity of land for public parks cannot be predicted, but fullest use should be made of the existing parks and local variations in landscape and topography to create a system of open spaces. The system would include secondary school campus sites and, perhaps, primary schools with their playing fields; and would contain as much as possible of the primary road system flowing through landscape settings. The beginnings of such a system are to be found, for instance, in the green wedge along Marton Road in Middlesbrough or in the parks along the A174.

3.141 Two special opportunities for extending this system should be mentioned:

a the valleys of the Steinsby and Billingham Beckes have been selected for the realigned route for the A19. It becomes all the more important therefore that these valleys should be properly developed as part of the open space system whilst continuing to be used for activities such as Teesside Park Racecourse;

b the banks of the river Tees are a more difficult problem as they are used intensively for industry for much of the course downstream from Victoria Bridge. However, the possibilities of creating a riverside landscape are being opened up as some of the activities fall into disuse. This is the case at Stockton Quay and at Ironmasters in Middlesbrough. Others may close, particularly upstream from and including Middlesbrough Dock. These opportunities should be taken together with those given by the banks of the Tees between Victoria Bridge and Yarm. They are described in chapter 15.

3.142 The new sports centres at Billingham and at Stockton provide for most types of indoor recreation including swimming and athletics. Their success suggests that this is the best method of providing for indoor activities. Their need to be easily accessible and the amount of traffic that they generate suggests that their best location would be as part of a district centre. To meet the anticipated needs of the population, new centres would be required at Redcar, Middlesbrough and in association with new development.

Recreation in the countryside

3.143 There is clear evidence locally and nationally of the rapid increase in the numbers of people wishing to use the countryside for their leisure, mainly by car trips. A major problem is that this increase may, by its sheer size, so change the character and appearance of favourite areas as to destroy their attraction. The main areas of attraction were mentioned in section 3.1, but a more definite policy is needed to ensure the best use of the countryside for recreation.

3.144 The positive policy should be for the creation of country parks, foreshadowed by the White Paper on Leisure in the Countryside (Cmd 2828, 1966) and contained in the Countryside Bill. These would be placed where town dwellers could enjoy leisure in the open without having to travel far. Their existence would ease pressure on the more remote and solitary places and would also reduce the risk of damage to the countryside and inconvenience to the countryside. They would be areas with pedestrian and vehicular routes, chosen for organised development with good access, car parking and recreation facilities including the creation of lakes for water recreation. They would be on a larger scale and with different character from the normal town park but there is no reason why these country parks should not be sited on the outskirts of, or even in towns surrounded by, the built-up area of the town. Four areas have the landscape features that make them suitable for development as country parks (see chapter 18).

- a the middle valley of the Billingham Beck, between Thrappe Thewles, Billingham, and Weyward Park;
- b the lower Laven valley, downstream from Hutton Rudby;
- c Eaton Moor overlooking the Tees Estuary;
- d a forest country park on the moors above Great Ayton, within the National Park.

3.145 In addition it is likely that further provision for recreation could be made along the coast. This is a particularly difficult problem as the feasibility of, say, a marina can only be tested for a specific proposal, whether it be the economic implications; the effects on tidal flows and coastal erosion; amenity considerations; or problems of traffic. It is probable however that the best location for such development would be on the coast between Redcar and Saltburn rather than at either town.

3.146 By this policy most people would be attracted to a few places where special provision would have been made for their recreation. The converse of this is that other areas would be subject to conservation policies. There is, the aim of planning policy would be to preserve as much as possible of their existing attractive quality. This would apply mainly to the parts of the National Park located in the survey area; the remaining parts of Eaton Moor; and the Tees valley above Yarm. It should apply too to several villages and the centres of some small towns, including Cowpen Sewley, Sedgely, Bishopton, and Middleton-Dee-Row, north of the Tees; and Hutton Rudby, Carlton-in-Cleveland, Stokesley, Great Ayton, and, if possible, Gilesgrove.

Distribution of employment

Heavy industry

3.147 Heavy Industry was shown, in chapter 2, to be the dominant activity of Teesside in 1968. It was taken to include Teesplan Industrial Groups 1-3, which comprise chemicals; oil refining; iron and steel; and

the predominantly steel using industries such as foundries, shipbuilding and industrial plant. These industries are site oriented in the sense that they rely on the river for shipping, launching, use of water and discharge of effluent; on rail sidings; and on inter-industry linkages by rail and pipelines. The grip on a whole is the sole user of these facilities on Teesside. As a consequence, this industry is located to a great degree in a narrow band either side of the river Tees downstream from Stockton, extending near the estuary to occupy reclaimed land on either side of it (see figure 3.13). In fact, 70 per cent of the employment is in two of the districts shown in figure 3.6, 21,000 at Billingham in chemicals (agricultural fertiliser); and 36,000 in the northern part of Eton in steel and chemicals (plastics and heavy organic chemicals).

3.148 Two criteria determine the future pattern of this type of industry on Teesside. The first is related to the economic changes affecting existing firms and the development of unused land in industrial ownership. It seems probable that the main effect of these changes will be to concentrate employment to an even greater extent at Eton though actual employment is not likely to rise because of automation and rationalisation within the steel industry. It is fairly clear that the recent trends will continue for reorganisation and new development to take place on the north bank between Cargo Fleet and Lazonby. It is probable that the remaining land at Eton Sands in the ownership of the steel industry may be used to continue this process, particularly if ideas are pursued for new wharves at South Gare capable of taking bulk ore cargoes of 100,000 tons. The converse of this is likely to be that the few, remaining small steel works will close. Two should be mentioned in particular in view of the local problems that would be created. The closure of Skinningrove Works at Loftus would create a problem of unemployment; and the closure of the remaining works in the Ironmaster's District in Middlesbrough would finally make available an area of nearly 400 acres in a central location in Teesside. These are dealt with later in the report, in chapters 6 and 9. The other changes within existing firms in the group are not likely to have such great effects. Thus the chemical industry at Wilton will probably develop until its whole site is occupied though it would be unlikely to result in a significant increase in employment. The shipbuilding industry could well finally close down on Teesside sometime during the twenty-five year period.

3.149 The second criterion determining the future pattern of this group is the existence of land that is suitable for development by heavy industry. Apart from Eton Sands, the only remaining piece of reclaimable land within the Survey Area is at Seal Sands, on the north bank. In addition, land at Cowpen Sewley, between Seal Sands and Billingham is reasonably well suited for heavy industry although it lacks direct frontage to the river Tees; and there is land on the north side of Greatthorn Creek, outside the Survey Area, although this is mainly in industrial ownerships. Seal Sands is in the ownership of the Tees and Hartlepool Port Authority which has plans for the use of about 600 of the 1,350 reclaimable acres for port development. It lies opposite the site of a proposed nuclear power station at Sellafield Cnrre, but it is understood that this need not, and should not, deter the industrial development of the Sands. Thus, 1,150 acres could be developed by heavy industry subject to the following conditions:

- a arrangements for fresh water supply are adequate,



mainly by the development of the potential of the upper river Tees;

b. arrangements for the discharge of effluent can be made within the limits set by the consultants for removing pollution of the river Tees;

c. if possible its development should be compatible with the continued presence of a landscape resource zone over part of Seel Sands, where there are sites of special scientific interest.

3.150 If these circumstances are met, then it seems probable that Seel Sands would be developed by 1981, although employment would probably be only of the order of 5,000 given the likely density of four persons per acre. The development should be restricted to heavy, site oriented industry including chemicals, oil, steel or non-ferrous metals. Similarly land owned by ICI between its Billingham works and Seel Sands should be developed only by the same type of industry. The purpose of this restriction is that it is the only land suitable for this type of industry and such land is in relatively short supply. The site would be quite unsuitable for labour intensive industry or other types of urban development because of the problems of travel-to-work that would result and because of the liability of the area to inversion fogs, sea mists and atmospheric pollution.

3.151 The only other type of site oriented industry that should be mentioned would be a very large labour and capital intensive industry such as car-assembly and related firms. The motor industry has in the past acted as the stimulus for creating new employment in Development Areas, for instance in Scotland, Wales

and Merseyside. The location criteria for such an industry would be likely to be easy access to a very large supply of labour; extensive tracts of flat land; and railroads. If the industry were to anticipate growth to about 20,000 employees, it would probably require a greater supply of labour than could be found within the survey area of Teesside. There is, however, the precedent of firms serving the motor industry located along the B1273 at Darlington and at Ulfley Nook on Teesside. The extensive flat land at Ulfley Nook would probably be a favourable location provided that the industry does not lead to further atmospheric pollution. It should be reserved as such, but its development would have to be planned with greater reference to Darlington and Aycliffe than has within the terms of reference of this report.

Light Industry

3.152 Light Industry, that is, Teesplan Industrial Group 4, contains four categories of employment, as shown in table 3.31. The first three categories are

Table 3.31. Employment in Light Industry

	1986	changes likely to existing firms
(a) site oriented	3,400	+ 700
(b) steel using	1,800	+ 800
(c) market oriented	3,500	+ 400
(d) labour intensive	8,000	+1,700
TOTAL (rounded)	17,300	+3,700

of comparatively small importance in the Teesside economy. The site oriented industries include timber, bricks and clay products; they are located close to supplies of raw materials or the docks. Employment among existing firms is likely to grow slightly but for instance the timber trade of the river Tees is concentrated at Hartlepool. The steel using industries, wire and other metal goods, are closely linked to the steel industry; their employment is likely to grow. Market oriented industries are those serving the local population for instance with printing of newspapers or some food processing and these too will grow slightly.

3.153 The most important category is the labour intensive industries. These come to Teesside as a consequence of Government policy for the distribution of industry and include, so far, firms in textiles, clothing and electrical apparatus. They were attracted to Teesside by various inducements, including the promise of sites, buildings and services on industrial estates, and the availability of labour.

3.154 So far estates have been provided by the Board of Trade and local authorities throughout Teesside, at Sedgefield; Billingham; Portrack Lane, Stockton; Cargo Fleet, East Middlesbrough; Eton; Redcar; Maska; Skelton; and, most recently, by the Board of Trade at Thornaby, and a private firm at Eaglescliffe (see figure 3.18). The experience of these estates has varied quite considerably. The local authority estates at Portrack Lane and Cargo Fleet, for instance, have mainly been occupied by firms in service industries, wholesale distribution, the motor trade and the like whereas the Board of Trade estates in the same localities have been occupied more by manufacturing industry. The rate of development, too, have varied: the Skelton estates have been developed very rapidly whereas the rate of growth in total employment at Skelton has been slow.

3.155 It is likely that employment on the parts of these estates that are already developed could provide only for a small increase in employment, about 1,700 jobs, and it is assumed that the remaining land at Stockton, Middlesbrough and Eton will be used for service industries. But a considerable amount of land remains to be developed for manufacturing industry: it is shown in table 3.32.

Table 3.32. *Conventional industrial land, 1986 (acres)*

Board of Trade industrial estates: Thornaby	390
local authority industrial estates: Billingham	194
Portrack	36
Sedgefield	30
private industrial estate: Eaglescliffe	160
other land at Sedgefield, Stockton	525

3.156 A mathematical analysis of estate development shows that this land is likely to provide an additional 31,000 jobs by 1991, assuming a rate of development and a build-up of labour similar to that found generally in British industrial estates. It was noted in chapter 2, paragraph 2.50, that the positive aim of regional policy should be to attract to Teesside an additional 53,000 jobs by 1991 on industrial estates. Thus there is a deficiency of nearly 22,000 jobs for which new industrial estates will have to be selected and laid out with services. But probably as much as three-quarters of the new jobs, both on the selected estates and in the new estates, should be for males. It was shown in chapter 2 that unless there is an increase of this order in male employment there will not be sufficient jobs to settle the assumed rate of increase in population by inward migration.

3.157 This regional aim would need to be met and jobs for a total of 53,000 workers attracted to Teesside in light manufacturing industry provided that national economic growth continues; that the Government uses its powers and inducements to attract industry; that the local authorities, Government and the private sector ensure that attractive sites, buildings and services are provided. The advantage Teesside would have to offer is a supply of trainable labour. However, the policy will be more easily implemented if due recognition were given to the business interests of prospective employers. The past record of growth on Teesside suggests that the firms would be branches with headquarters probably in the West Riding, Lancashire or the West Midlands; that their supplies of raw materials and their markets would be in the same area; and that there would be almost complete reliance on road transport both for managerial communications and the movement of goods.

3.158 Surveys made by various observers and on Teesside stress the importance of a location that not only is, but also seems to be, most accessible for employers. In these circumstances, provided a firm has easy access to the whole of Teesside for its predominantly male labour supply, its best location will be on the south side near the main entrances to Teesside along the A163 or the A172 or, to a lesser extent, the A66 from Darlington. The estates committed for Eaglescliffe and Thornaby meet these requirements and are likely to be successful when made fully accessible by road. Their effect will be to shift the centre of employment in light industry upstream from Middlesbrough to Stockton and Thornaby.

3.159 In the interests of efficient management and transport provision the new estates should be between about 75 and 125 acres in size and thus, given the likely phasing of the setting up of estates, perhaps a further seven estates might be required. Their general location will be considered in relation to urban structure policy in later chapters. They should be within a mile and, preferably, within sight of an access point to the primary road system; and with a good level of public transport services. Their design and layout should be to the highest standards with sufficient flexibility to satisfy the requirements of a variety of employers and to meet possible plans for future expansion by individual firms. The development plan for Thornaby industrial estate provides an excellent precedent for this. Their appearance should be of the highest architectural and landscape quality following the example, for instance, of the Chrysler Cummins factory at Darlington. Finally, there must be no question of these new estates being occupied by firms likely to create considerable atmospheric pollution.

Service employment

3.160 The distribution of service employment falls into four different patterns:

- a highly centralised services situated in Middlesbrough and Stockton central areas and nearby locations;
- b services located by reference to the communications system;
- c services located in and near the main residential areas;
- d employment in construction.

Roughly, employment in each of these categories is shown in table 3.33.

Table 3.23. Service employment, 1966-81

	1966	1981
centralised	26,000	46,000
decentralised centres	14,000	24,000
residential and dispersed	37,000	71,000
constructive	17,000	24,000
TOTAL (rounded)	94,000	165,000

3.161 The highly centralised services are located in the central areas of Middlesbrough and Stockton where the main employment is in retailing, finance, professions and administration (TIGs 5 and 6). The two centres together employed 64 per cent of the total number of people working in these activities and it is likely that the two centres will cover about 62 per cent of the total employment in 1981. The reason for this lies in the proportionate

Table 3.24. Employment in TIGs 5 and 6, 1966-81

	1966	1981
central Middlesbrough	56,000	30,000
central Stockton	6,900	12,400
elsewhere	16,100	26,000
TOTAL (rounded)	42,000	61,400

increase in the employment in the central area is the evidence that productivity is likely to be higher in the more specialised types of retailing of the centres.

3.162 The other highly centralised activities are those either providing a service such as small workshops of laundries or those concerned with storage, wholesale distribution, builders' merchants and the like. Both of these types of activity need a location near the centre of accessibility for Teesside close to the main central areas. As such, they have been among the chief occupants of the local authority estates at Portrack Lane and Cargo Fleet Lane. They are relatively large users of land as densities tend to be low at about 50 persons per acre in warehousing. Employment could increase by more than 4,000 by 1981 from its present level of nearly 8,000 but this would require nearly 200 acres. Little land remains at the Portrack Lane site and Cargo Fleet Lane could soon be fully occupied. The additional land will have to be found in a central location and the most favourable sites are probably on land being cleared at North Middlesbrough. This is discussed more fully in chapter 8.

3.163 The services located by reference to the transport system include all forms of transport by rail, sea or air and, growing in employment, the road haulage, garage and motor trades. Their distribution closely follows the lines of the transport system.

3.164 The most rapidly growing category of employment is that which is distributed throughout the residential areas. At present about 16 per cent of all employment is of this kind but the proportion is likely to grow to about 22 per cent by 1981. Its main characteristics, however, are changing. In the older housing areas the pattern was for a wide dispersal of jobs in local shops, primary schools, small secondary schools, health and social services. In the future, however, there is likely to be a tendency for bigger centres within and close to housing areas: district centres giving shopping, commercial and administrative services with employment of the order of 2,000 jobs; district hospitals, employing between 1,000 and 2,000; and secondary school campuses. A wide range of employment would be in local shops, primary schools and so on. In total, it is likely that a large new residential area might

offer a stable employment of the order of 100 jobs per 1,000 population though it could rise to higher levels.

3.165 Finally, there is the employment in construction which by its nature tends to be both dispersed and mobile, being located in the main areas under construction at a particular time. It could become a major factor in the distribution of employment. For instance, an area being newly developed for a population of, say, 80,000 could be giving employment for about 5,000 workers during the period of its construction.

Location of employment

3.166 The main characteristic of the geographical location of employment was the degree to which employment was concentrated in the four riverside districts of Middlesbrough and Eton on the south bank, and Stockton and Billingham on the north bank (see table 3.25). In the case of heavy industry this

Table 3.25. Total employment, 1988 ('000's)

district	heavy industry	light industry	services and primary	total
1. Middlesbrough	6	7	33	50
2. Stockton	6	4	18	30
3. Thornaby	4	—	8	12
4. Billingham	21	—	6	28
5. Eton	25	2	8	45
6. Redcar	—	—	3	3
7. Norton-Morton	—	—	2	2
8. Eaglescliffe-Yarm	1	—	2	4
9. Billingham	—	1	1	1
10. Saltfield	—	—	4	4
11. William Meeke	—	—	2	2
12. East Cleveland	3	—	2	5
13. Gilesgate	—	1	2	3
14. Skelton	—	—	2	2
1-6 Urban Teesside	37	13	60	110
7-14 Rural Teesside	4	2	16	22
TOTAL (rounded)	41	15	100	157

Notes: Heavy Industry is TIGs 1-3;
Light Industry is TIG 4;
Service Industry is TIGs 5-8.

concentration is even more marked as 90 per cent of the total employment is actually found within these four districts in a narrow band either side of the river, but even for the most widely dispersed form of employment, services, more than 70 per cent of the jobs are in the same four districts.

3.167 This pattern will change. Employment in existing industrial firms on Teesside will change for reasons internal to the industries, irrespective of planning policies. Employment in services will also change irrespective of planning policies provided only that population and incomes continue to rise. And employment in light manufacturing industry will rise as the committed industrial estates become fully developed. These changes are described as autonomous or committed changes to employment and their effects by 1991 are likely to be those shown in table 3.28.

3.168 The main areas where employment is likely to increase are at Thornaby, Eaglescliffe and Stockton, where industrial land commitments and some changes in services will provide for an increase of 40,000 jobs, or 60 per cent of the total autonomous and committed increase in employment. This would mean that employment would still remain concentrated in the riverside belt of districts, but with an extension of the main employment upstream to include Thornaby and Eaglescliffe. The other important increase in employment

Table 3.26. Total employment on Teesside by 1981, by autonomous and committed development ('000's)

district	light industry				total
	heavy industry	electronics	assembled	services and primary	
1. Middlesbrough	3	0	—	84 (2)	86
2. Stockton	7	0	3	28	43
3. Thornaby	5	—	12	5	32
4. Billingham	22 (1)	1	6	50	38
5. Easington	28	2	—	10	47
6. Redcar	—	—	2	11	13
7. Northwange-Morton	—	—	—	3 (3)	6
8. Eaglescliffe-Yarm	3	1	7	3	14
9. Saltburn	—	1	—	1	1
10. Seaboard	—	—	2	2	4
11. Saltburn-Mablethorpe	—	—	—	3	3
12. East Cleveland	1	—	—	3	4
13. Sullborough	—	1	—	3	4
14. Spinkley	—	—	—	3	3
1-8 Urban Teesside	65	18	22	123	230
9-14 Rural Teesside	4	3	9	28	41
TOTAL (rounded)	70	21	31	148	272

(1) Includes 5,000 jobs, Steel Works.

(2) Includes 2,000 jobs, central Government office.

(3) Includes 1,000 jobs, University.

would be at Middlesbrough central area and in the new, committed residential areas.

3.168 The different patterns of employment for males and females are also important (see table 3.37). The main contrast between the patterns is the degree to which the opportunities for female employment are even more circumscribed than those for males. About 80 per cent of all jobs for women were in Middlesbrough and Stockton although they contained less than 50 per cent of the population of Teesside. This concentration of female employment should fall provided that employment in services rises as forecast and that it becomes more widely dispersed, especially in the newer residential areas. The changes in the pattern of male employment, however, are more likely to follow those for total employment, that is for a westward extension of opportunity in the riverside districts upstream as far as Eaglescliffe.

Table 3.37. Distribution of male and female employment, existing and committed ('000's)

	1980		By 1981	
	male	female	male	female
1. Middlesbrough	30	23	34	22
2. Stockton	18	11	28	17
3. Thornaby	7	2	21	8
4. Billingham	28	8	28	7
5. Easington	41	4	40	7
6. Redcar	3	2	7	4
7. Northwange-Morton	2	1	6	3
8. Eaglescliffe-Yarm	3	1	12	2
9. Saltburn	1	—	1	—
10. Seaboard	3	1	2	2
11. Saltburn-Mablethorpe	1	1	2	1
12. East Cleveland	4	1	3	2
13. Sullborough	2	1	2	3
14. Spinkley	1	1	2	1
1-8 Urban Teesside	128	48	188	75
9-14 Rural Teesside	17	8	28	14
TOTAL (rounded)	142	56	193	89



J. H. J.

Great Ayton

4 Urban structure and the opportunities for change

Summary

a The urban structure of Teesside contains three contrasting zones:

(i) a belt of land either side of the river, with 80 per cent of the jobs on Teesside in 1966; it will have at least 70 per cent of the jobs in 1991 because of committed and autonomous growth although the zone will have been extended upstream to include Eaglescliffe and Thoresby;

(ii) the main residential areas lying either side of the industrial zone; these too will have been extended by 1991 mainly by the weight of committed developments on their southern bounding; the effect will be for greater dispersal of population;

(iii) rural Teesside, which includes the farming lands, the hills of the National Park, and the coastal areas of Cleveland.

b This urban structure has been divided into fourteen districts. The effect of the committed development is likely to be:

(i) districts subject to much internal reorganisation: Middlesbrough and Eton, where industrial and commercial development will continue in their northern parts, and housing development in the south compensating for the clearance of obsolete housing in the north; Stockton will change in the same way, though to a lesser degree, with redevelopment in the centre;

(ii) districts subject to much development: there is a substantial commitment for residential development east and southeast of urban Teesside at Northrop-Martin, Gulaborough, Saltham and Merkle; and the likelihood of a substantial increase in employment in the southwest at Thoresby and Eaglescliffe-Yarm;

(iii) districts not likely to see much development: these include Billingham, Redcar and the rural areas of Sedgfield, Stillington and Stokesley;

(iv) finally, East Cleveland is a former mining district whose economic base might be seriously weakened.

c The main problems of this urban structure are:

(i) the decay and obsolescence of much of the urban fabric, although the recommended housing policy for redevelopment and rehabilitation could remedy this in part;

(ii) the poor appearance of much of urban Teesside arising from atmospheric and river pollution and the lack of a systematic policy for landscape treatment;

(iii) the poor quality of many of the services for shopping, commerce and culture, intensified by the division of Teesside into a series of small localities too small to sustain the higher quality services; and by the relatively low family incomes;

(iv) the poor quality of parts of the road system especially those giving access to the industrial areas of the south bank, at the Tees bridges and on the main

approaches to Teesside; much of this will be improved by committed road schemes but the population growth at Northrop-Martin and the employment growth at Eaglescliffe in particular would be poorly served by roads.

d These problems are offset to some extent by the opportunities given by the changing structure of Teesside and acceptance of the regional growth policy. These opportunities arise from:

(i) of the total increase in population forecast for 1966 to 1991, 70 per cent or 160,000 people have still to be found suitable locations in an urban structure, and 40 per cent of the increase in employment (45,000 jobs) also has to be located;

(ii) the untapped resources of Teesside which include reclaimable land for heavy industry at East Sands and land west of Stockton (as a longer term reserve); the potentiality of the river Tees to accommodate the largest deep sea vessels; and the water resources of the upper Tees valley;

(iii) the proximity of the National Park and sites suitable for attractive country parks; and the availability of land which has the potential for the creation of a fine built environment;

(iv) the flexibility of the urban structure to accommodate changing conditions, given by the relatively low density of much of urban Teesside, the dispersal of employment within a narrow, but long riverside belt, the need to clear obsolete housing from the most densely developed areas, and the penetration of the urban area by open countryside.

e Seven strategies are put forward as alternative means of taking these opportunities and giving an urban structure to Teesside. Each of these strategies illustrates a different form or direction of growth:

(i) three involve linear extensions to the urban area: westwards, to Darlington, along the south bank of the Tees;

southwards, along the Leven valley;

northeastwards, to Stokesley and Gulaborough;

(ii) one is for satellite development, exemplified by a location at Stokesley;

(iii) two are for forms of dispersed settlement:

a series of small communities, south of Teesside; a smaller number of larger communities, northwest of Teesside;

(iv) one is for compact development, as close to the existing built-up area as possible.

The urban structure of Teesside

4.1 Teesside in 1966 is strongly differentiated into three zones. The first is a narrow strip either side of the river downstream from Stockton to the sea. In this strip



Figure 4.1
COMMITTED CHANGES TO
URBAN STRUCTURE

within two miles of the river there are 157,000 jobs or 80 per cent of the total on Teesside. It includes virtually all the heavy industry at Billingham and Eston; the hub of the rail communications and the port; the warehousing and storage services of Teesside; and the two central areas of Stockton and Middlesbrough. The zone is well served by river and rail communications but is poorly served by roads; there are only two effective bridges and the south bank in particular lacks an effective road parallel to the river.

4.2 Behind this strip on both sides of the river are successive layers of housing, old and needing rehabilitation nearer the river, and newer housing further out. The few jobs in this zone are mainly in services; the zone chiefly provides the labour for the riverside employment areas.

4.3 These two zones together comprise urban Teesside. Beyond them is rural Teesside which includes diverse environments including commuter areas such as Selburn, Mankie and Guisborough; the agricultural areas; and the former mining area of East Cleveland.

4.4 This urban structure is constantly changing (see figure 4.1). The future dimensions are already indicated by the 'committed' and 'autonomous' development. They comprise the changes to the urban structure that are virtually certain to take place as a consequence of four types of action:

a there are planning decisions that have already been taken but which have not yet been implemented; planning permissions for residential development already granted and allocations on approved and draft town maps; proposals to construct new roads or to improve existing roads which had reached the stage where the

line of the improvement had been generally settled even if the standard of the improved road had not been fixed; and industrial estates whose location had been fixed and on which money had been spent in providing services;

b there are the probable consequences of private investment decisions likely to be taken as a consequence of the long-term growth in population, rise in income and changes in the national and local economies. These changes are autonomous; that is, local planning policy will have little direct effect on them; although it may give guidance and encouragement and exercise planning control;

c there are the probable consequences of two of the recommendations to be made by Teesside Survey & Plan concerned with the alleviation of particular planning problems, namely the redevelopment and rehabilitation of outworn housing areas and the growth of the regional centre.

4.5 These types of action are regarded as likely to be implemented irrespective of the urban structure policy to be recommended by Teesside Survey & Plan. It is not so easy, however, to predict when the individual developments will be carried out; instead a prediction has been worked out of what their effects would be by 1991.

4.6 As a consequence of these committed and autonomous changes, employment in the riverside zone will rise by 63,000, resulting in at least 70 per cent of the total employment on Teesside being located there in 1991, compared with 80 per cent at present. But there will be greater changes within the riverside zone, giving greater emphasis to employment upstream from Middlesbrough. Growth will take place in North

Middlesbrough, mainly in the central area (an increase of 12,000 jobs); in central Stockton and the nearby Bowfield industrial area (an increase of 10,000 jobs); at Thornaby, on the industrial estate and the district centre (17,000 new jobs); and at the industrial areas of Eaglescliffe and Uxley Nook (10,000 new jobs). The only increase in employment downstream from Middlesbrough is likely to be about 2,000 jobs, in heavy industry and a further 5,000 in industrial and port development at Seal Sands. Growth in the rest of urban Teesside will be small but there is likely to be a substantial growth in employment in rural Teesside (18,000 new jobs), mainly as a consequence of new housing development and the need for services.

4.7 Population on the contrary will become much more widely dispersed. The number of dwellings in urban Teesside is likely to remain the same as the clearance and overspill of 22,000 dwellings in the rehabilitation programme would be compensated for by commitments to allow the construction of a similar number of dwellings on the remaining undeveloped parts of urban Teesside that are suitable for housing. But it is very probable that average occupancy rates in urban Teesside will fall as it is the newest houses which are occupied by the largest, and by the growing families. Thus the population of urban Teesside is likely to fall from 376,000 to 358,000.

4.8 Sufficient land has already been committed for housing in rural Teesside for a growth in population of 87,000 people, almost entirely located in two places. The first is an extension of the residential suburbs of Middlesbrough into Hamlington, Nunthorpe and Merton; this will provide land for 40,000 more people. Nearly all the remainder is in Cleveland; along the coast between Redcar, Middles and to a lesser extent at Saltburn and Brotton; and at Salsburgh.

4.9 The major commitments for new roads provide for improved access to Teesside along the Sandeford (A19), Durham (A177 and A689), Darlington (A66), Northallerton and the south (A18) roads. Within Teesside there are the realignment of the A19 on a north-south axis between Stockton and Middlesbrough with a new river crossing; a link from the A18 via a substantial new intersection south of the river bridge to Middlesbrough central area; part of the South Teesside Parkway; and a proposed new river crossing near Thornaby.

4.10 Finally changes to the central areas of Teesside are virtually committed by the proposals for redevelopment at Middlesbrough and Stockton; the completion of large district centres at Billingham and Thornaby; and the recommendation that Redcar's shopping centre be developed. Together, the effect of these schemes would be to perpetuate the division of Teesside into separate hinterlands for Stockton and Middlesbrough.

The districts of Teesside

4.11 The division of Teesside into fourteen districts has been described in figure 3.6. A deeper understanding of the character and likely evolution of Teesside can best be gained by considering each of the districts in turn. The tables giving details of population, housing and employment were given in paragraphs 3.61-3.64 and 3.166-3.169. Further understanding of the role of each district is given by a comparison of the resident working population and the amount of employment in each district indicating the degree to which they are primarily residential in character or sources of employment (see table 4.1).

Table 4.1. Net balance of employment opportunity ('000's)

Districts	1986		1991, committed and supplementary changes	
	males	females	males	females
1. Middlesbrough	+12	+4	-1	+12
2. Stockton	+3	+2	+1	+4
3. Thornaby	0	-1	+13	+2
4. Billingham	+15	+1	+17	+2
5. Darlington	+23	-1	+27	+1
6. Redcar	-7	0	-8	0
7. Nunthorpe-Merton	-3	-1	-11	-4
8. Eaglescliffe-Yarm	-1	-1	+10	+2
9. Billingham	0	0	0	0
10. Salsburgh	+1	0	-1	0
11. Saltburn-Marske	-3	0	-6	-2
12. East Cleveland	-2	-1	-6	-2
13. Salsburgh	-1	3	-4	-1
14. Brotton	-3	0	-2	-1
1-6 Urban Teesside	+15	+4	+51	+21
7-14 Rural Teesside	-12	-3	-20	-8
TOTAL (rounded)	+3	+1	+31	+13

Notes: employment opportunity = total employment - resident working population (excluding registered unemployed); '+' indicates a surplus of jobs, filled by inward travel to work; '-' indicates a deficit of jobs, and outward travel to work.

The figures for 1991 appear to show that about 43,000 people are expected to travel into Teesside. This is a consequence of the fact that the location of a greater proportion of the total jobs likely by 1991 is already committed than that for the total population of 754,000.

District 1: Middlesbrough (1986 population: 155,000)

4.12 In 1986, Middlesbrough contained 31 per cent of the population and 27 per cent of the employment on Teesside. It contained four distinct areas:

a the riverside tract of heavy industry included the Ironmasters' District which was the original site of the iron industry on Teesside and is the subject of a special study in chapter 9; and Middlesbrough Dock. For some time however heavy industry has been closing down as the area no longer meets its requirements especially those of access by ships using the river. Road access to the area is very poor and the site has not proved attractive to light industry or services;

b central Middlesbrough, between the main railway and Albert Park, an area of dense, bye-law housing with the central area in its midst. This is the subject of special studies in chapters 8 and 12. In general most of this area will either be cleared or extensively rehabilitated in the twenty-five year period. This clearance will give flexibility and space for the growth of the central area into a regional centre and the service industries seeking a central location;

c the early twentieth century and inter-war suburbs including some of the more attractive residential areas on Teesside, with a mature landscape. This area is not likely to undergo much physical change;

d the southern periphery currently being developed for housing but interspersed with parts of the north-south linear open space system including the sites of school bases, district hospitals and parks.

4.13 The district has reasonably good internal communications but is inadequately served as part of Teesside. The main east-west links are very poor though there are commitments to improve them by a so-called northern route, that is a link from Newport Bridge to the central area; and to realign the A174, creating a South Teesside Parkway. Neither of these commitments forms part of an integrated system as it stands. North-south links are confined to a series of parallel roads all of limited capacity passing through residential areas.

4.14 At present therefore Middlesbrough fulfils the role of a central area for south and east Teesside. It is the home of much male labour working mainly in the adjacent district of Easington but draws upon adjacent districts for female labour in its service employment. In future the population of Middlesbrough is certain to fall because of the overmills induced by rehabilitation, redevelopment and the provision of space for the central area; the lack of land for new housing; and the probability of a fall in occupancy rates. The drop in population could be as much as 37,000 from its present level of 105,000. Conversely the number of jobs in the district will rise by about 10,000, from 63,000 at present. The source of this change will be the growth in employment in services, consequent upon the regional centre policy which will more than offset the probable loss of nearly all the jobs in heavy industry.

4.15 The extent of this increase in jobs in the district should not be over-stressed. The district will contain a substantially smaller share of the total employment on Teesside than it has at present (21 per cent in 1951 compared with 27 per cent in 1966). Even the regional centre itself is only likely to have 28,000 jobs, or 9 per cent of those on Teesside in 1961, compared with 15,000 or 8 per cent in 1966. The distinctive feature of this is that almost the entire net gain in jobs will be for females and the district will be by a wide margin the main employer of females on Teesside. There is likely to be a substantial net daily journey to work by females into Middlesbrough, almost entirely to the central area, and also a substantial journey to shop from the rest of Teesside.

4.16 In the light of the requirements of a primary road system for Middlesbrough and Teesside as a whole, the committed improvements in communications are likely to be inadequate though the crucial ones for the realignment of the A19 and the South Teesside Parkway are important. It will be vital to integrate these as part of a primary system which links Middlesbrough and the rest of Teesside.

District 2: Stockton (1966 population: 63,000)

4.17 Stockton was the second largest district in size of population in 1966 but was only the fourth largest employment district. It contained a central area which was smaller but more attractive than that of Middlesbrough and surrounded by a relatively small amount of bye-law housing for which redevelopment and rehabilitation would be required. Studies of central Stockton and the housing rehabilitation are given in chapters 10 and 12.

4.18 Two industrial areas lie east and south of the central area. That to the east includes Portbeck Lane, which is one of the main locations chosen by service and storage industries on Teesside. Most of the remaining vacant land is being developed for a liner train depot. The industrial area to the south around Bowesfield Lane includes foundries and newer, growing sectors of industry. It should continue to be developed by industry provided it is given good road access. The remainder of the district is housing of varying age.

4.19 Communications between this area and the rest of Teesside are poor. The existing A15 and the main radial routes to Darlington (A66) and Durham (A177) focus on the central area. The realignment of the A19 is committed and the two other roads are being improved. Improvements have been proposed to the road system of the town centre but no proposals have been made effectively to connect the district to the realigned A19.

4.20 The effect of the committed development will be for Stockton to retain much of its present status. Population is likely to remain stable as the effects of the relatively small amount of overmills are countered by new construction. Employment, especially that in services, should rise. The total effect however will be for the district to remain one that on balance supplies male workers to other districts, especially to Billingham; but attracts the place of work for women living outside the district.

District 3: Thornaby (1966 population: 24,000)

4.21 This district is committed to undergo quite considerable changes. At present it has a series of activities ranging from heavy industry on the banks of the new Tees in the north, through old housing areas at Marsdale Road and inter-war housing. New houses and a shopping centre are under construction on the site of a former airfield in the south of the district. The district has strong natural boundaries, the river Tees to the west and Stanbury Beck to the east.

4.22 This pattern will be modified as the older housing areas are cleared or rehabilitated and the remaining committed land built up in the south. The net effect will be for a small rise in population. But Thornaby will be strongly affected by the committed road proposals. The realignment of the A18 to pass down the valley of Stanbury Beck and the construction of the South Teesside Parkway will change Thornaby from being a district to which road access is comparatively difficult, particularly from the existing trunk roads into Teesside, to one which will have the best access in all Teesside. Its communications would remain poor only in the north if no further improvements to roads were carried out. This new accessibility is matched by two other substantial commitments, both in the south. The new industrial estate and the new district shopping centre are likely to provide about 17,000 additional jobs by 1981. The district is likely to become the second largest importer of male workers from other districts, and will become a small importer of female workers.

District 4: Billingham (1966 population: 36,000)

4.23 This district includes a core of urban development and extensive tracts of fern and woodland, marshes and sands. The development amounts virtually to a new town with its own shopping centre; and the very extensive industrial area, mainly comprising ICI. Two small, older settlements, Haverston Hill and Port Clarence, are sited downstream and downwind from ICI, though they are more closely linked with Middlesbrough via the Transporter Bridge than with Billingham. Coarse Marshes and Seal Sands lie to the east of Billingham; this area should be reserved for use by capital intensive, low density heavy industry; for port development; and for nature conservation areas. The most attractive countryside on the north side of the Tees is at Wynyard Forest and Billingham Beck.

4.24 At present, Billingham is a net importer of both male and female labour. The male jobs at ICI in particular are a major source of employment for the rest of Teesside and also for people travelling daily from Hartlepool. This is likely to remain so. There is likely to be a fall in employment in heavy industry especially if the Furness Shipyard should be closed but this would be offset by jobs provided on the Billingham Industrial Estate and in the town centre. Population will probably rise by a small amount as the remaining committed land is developed. Accessibility to this area will be substantially

improved by the realignment of the A19 and by improvements to the A688, Sedgefield to Hartlepool road. The other main road proposal in the district is for a new road to provide access to Seal Sands.

District 6: Eton (1986 population: 45,000)

4.25 The role of Eton in the urban structure of 1986 is that of the biggest source of male employment on Teesside. The net gain by daily travel-to-work is about 28,000 males though it is roughly in balance for female jobs. The male jobs are nearly all in the belt of heavy industry that includes Cargo Fleet, Cleveland, Looesby and Wardenby steel works; ICI Wilton; and the oil refinery and other industries along the riverbank from Smith's Dock to Tees Dock. Furthermore, the net daily travel has been increasing as industrial development has rapidly proceeded in this district. The remainder of the district comprises the old industrial communities at South Bank and Greengate in the north; the old villages of Eton and Normanby in the south, now over-run by suburban development; and between them later-war and post-war housing, much of it council development.

4.26 Communications within the area are relatively good. The two main east-west routes are the A174 in the south to be replaced by the South Teesside Parkway; the A1088 in the middle, a recently constructed dual carriageway from Redcar to Middlesbrough; a new road linking these at Greystones giving access to Lackenby and Wilton works; and several north-south roads. The main weakness is once more access to the riverside industrial area both for movement parallel to the river and to the riverside docks and industries.

4.27 The pattern of development in this district and its role in the urban structure are unlikely to change. Industrial development will continue but is unlikely to create many new jobs. The older residential areas will be redeveloped or rehabilitated though the loss of dwellings there will be compensated by the construction of new dwellings in the south. Population is likely to fall because of lower occupancy rates.

District 8: Redcar (1986 population: 34,000)

4.28 Redcar has a triple role in the urban structure. It is a residential area for men working mainly in the adjacent district of Eton; a district centre offering services to the local population and the adjacent district of Saltburn and Merske; and a seaside recreation centre for urban Teesside and indeed for places further afield. Some further growth in population is possible as a consequence of committed proposals; and a growth in service employment is probable especially for women. As a consequence the structural role of Redcar will remain unchanged. A special study of its central area is given in chapter 11.

District 7: Nunthorpe-Merton (1986 population: 18,000)

4.29 The district contains the villages of Marlon, Ormesby and Nunthorpe on the southern margin of urban Teesside and is described in chapter 13. Recently population in this area has grown considerably as suburban development has continued until its population has now reached 18,000. The area has very little employment, no more than a few jobs in services. It is a very attractive residential area that has the highest average family income on Teesside. People travel daily

to work at North Middlesbrough and the other industrial areas.

4.30 This tendency will intensify in the future. As a consequence of recent planning decisions land has been allocated for a further 13,000 dwellings, sufficient to raise the population to about 58,000 by 1991. However, no comparable provision has been made for employment in the area, nor has any allowance been made for improving the provision of services and communications other than the proposed construction of the South Teesside Parkway. Thus this area could become the largest single source of daily travel on Teesside with about 15,000 of its residents, or two-thirds of the population, seeking work outside the district; and most services such as district shopping facilities also being provided outside the district.

District 6: Eaglescliffe-Yarm (1986 population: 11,000)

4.31 This district occupies what is currently the south-western tip of urban Teesside, a ribbon of development along the A19 road through Eaglescliffe to Yarm. It is described in chapter 14. Yarm is a residential suburb of Teesside with the attractions of a historic market place but formerly it was also the lowest bridge on the river Tees. The remainder of the district is nearly all farmland but with the steep-sided valleys of the Leven and Tees cutting through it. Eaglescliffe is the junction where the main railway lines from Darlington and Northfletton join. Finally the district contains Teesside Airport at Middleton St. George.

4.32 The district has already begun to change. There is a small but growing demand for houses especially near Yarm that would be sufficient to raise the population from 11,000 to 22,000 by way of committed development. But the industrial developments are of much greater significance including the setting up of a private industrial estate of 130 acres at Eaglescliffe and the growing industrial development at Urley Nook. Between them, sufficient land is set aside for employment to rise from about 4,000 to about 14,000, most of the increase being for men. On the strength of this commitment there would have to be a daily travel-to-work of about 10,000 males and 2,000 females from other parts of Teesside. No comparable improvements to communications have yet been proposed. In particular, as the employment centres would lie on the north bank of the Tees, they would be relatively inaccessible from the residential areas of Thornaby and south of Middlesbrough. This isolation could lead to a slower pace of development of the industrial land.

Districts 9 and 10: Stillington and Sedgefield (1986 population: 12,000)

4.33 This is the rural, northwestern part of Teesside. The main settlements are at Sedgefield, an old village which has been growing recently, and the coal mining village of Fishburn. New houses and economic changes are possible as a consequence of current commitments and the two main roads crossing the district, the A66 to Darlington and the A177 to Durham, are being improved. But on the whole little change is forecast directly for this area.

District 11: Saltburn and Merske (1986 population: 14,000)

4.34 Saltburn and Merske are two physically separate small settlements which, with New Merske, make a

residential area with some of the attractions of living near the coast. Saltburn is the older town, in an attractive cliff top setting with a deep wooded valley on its eastern flank. Middlesbrough is newer and growing rapidly. At present there is little employment in the district and most of the male working population travels daily to work out of the district.

4.35 Communications with the east of Teesside are difficult by road although they will be considerably improved by the South Teesside Parkway and a by-pass for Middlesbrough. Rail communications are good. Saltburn is the eastern terminus of the half-hourly passenger service to Darlington, via Redcar and Middlesbrough. The attractions of living in a coastal location, combined with ease of access to ICI Winton, have resulted in many applications for planning permission for housing and the population of the area could rise to 20,000 as a consequence. As there are no parental commitments for new employment, daily travel might increase considerably.

District 12: East Cleveland (1966 population: 22,000)

4.36 There has been very little evidence of demand for new development in East Cleveland, unlike at Saltburn and Middlesbrough, and its population has been constant for at least forty years. Recently there has been a small demand for new houses mainly in the western more accessible part of the district. As a consequence, sufficient land has been committed for the population to rise to between 25,000 and 30,000, depending on the amount of this land that might be needed for overspill, possibly created by the rehabilitation of older housing areas in East Cleveland.

4.37 The economic basis of life in East Cleveland is precarious. Total employment is about 5,000 of which half is mainly for men at Skinningrove. This works is the last remnant of the iron and steel industry in Cleveland brought into existence by the iron ore workings which built up the district in the nineteenth century. The last mines closed in 1964. The rest of the employment is mainly in services. In the shopping centre at Loftus, and in other parts of the district. There is also a small Board of Trade industrial estate at Skelton though only about 400 people are employed, a smaller figure than ten years ago. As a consequence, there is a shortage of about 1,000 jobs for women, and 2,600 for men, which is met mainly by daily travel-to-work to urban Teesside. Unemployment rates in the area are high but the actual numbers involved are comparatively small. Figures for October 1967 show a rate of male unemployment of 13.4 per cent in the Saltburn exchange area which includes Skelton and Brotton, and a rate of 3.1 per cent in the Loftus area; this amounts in total to 320 men. The female rates are much lower in Saltburn and in total 71 were unemployed. There is also latent unemployment in the areas that activity rates are low, particularly for females. The additional number of women who might work if rates were as high, say, as in Middlesbrough, would only be about 300.

4.38 The situation would further deteriorate if the Skinningrove works were to close. The changes of climate are sufficiently strong during the next twenty-five years that pinning policy should recognize and allow for this possibility. If this were to happen, and if population were to grow to 20,000 (the lower figure of the possible range of size of population) there would be a shortage of about 6,000 jobs for males and 2,000 jobs for females which would have to be met by daily

travel out of the area unless alternative employment were provided within East Cleveland. Finally, road communications both within East Cleveland and between East Cleveland and urban Teesside are poor, although the committed improvements to the South Teesside Parkway, the Middlesbrough by-pass, the A171 and the Guisborough by-pass will do much to improve travel conditions.

4.39 The district has its attractions but these are offset by its relative isolation and by the very difficult nature of its topography. At present it contains Loftus, the largest town in the district with a population of 7,000; Brotton, 4,000; Skelton, nearly 4,000, and Boeckeb, nearly 3,000. It poses one of the most sharply defined local planning problems on Teesside because of these factors and the real possibility that its economic base will deteriorate even further.

District 13: Guisborough (1966 population: 12,000)

4.40 Guisborough is an old attractive market town set in a fine natural location between the Cleveland Hills and Eton Moor. This has made it a popular residential area even though few jobs are available in the town. It is reasonably accessible from Teesside and some of the committed road improvements, particularly those to the A171, will make it still more so. Land already committed for housing would take the population to about 25,000; as no additional jobs are proposed this would mean an increase in daily travel-to-work.

District 14: Stokesley (1966 population: 12,000)

4.41 This district includes the remaining rural areas south of the river Tees, and east of the proposed alignment of the A13. In topographic terms, it includes the Scarer plateau of high agricultural quality; the upper Leven valley and the line of villages marking the lower part of the Cleveland Hills; and the steep face and moorlands of the Cleveland Hills themselves. Many of the villages are attractively situated and the two country towns of Stokesley, with a population of 3,000, and Great Ayton, 4,000, have a high architectural quality. Apart from a small amount of work in local services and farming, people have to travel daily for work to urban Teesside. There are a certain number of small settlements, mainly at Hutton Rudby and Stokesley, which would probably result in an increase of population to about 18,000.

Problems of the urban structure

4.42 The urban structure of Teesside in 1966 has four weaknesses.

a The physical quality of part of the urban fabric is worn out and obsolete. Much of Teesside was built during a comparatively short period during the last half of the nineteenth century. Today many of these buildings are either structurally unsound or more likely are no longer suitable for the uses to which they are put. This applies equally to the older housing areas; to parts of the central areas, particularly that of Middlesbrough; and to some of the industrial areas. It applies as much to the layout and environment of buildings as to the buildings themselves. The solution must lie in urban renewal at a faster rate than in the recent past either by clearance and redevelopment or by rehabilitation.

b Too much of urban Teesside is unattractive. It is partly a question of pollution: atmospheric pollution

and the pollution of the river Tees. There can be no permanent cure for atmospheric pollution as part of its cause lies in the climate of Teesside. But its effects can be alleviated by extending the areas covered by smoke control orders; continuing to improve methods of controlling industrial sources of pollution; and by planning to build new residential areas where pollution is less likely. The river pollution question is being tackled by consultants appointed by the local authorities, J. D. & D. M. Watson & Partners. The unattractive character of Teesside is partly a question of the absence of a comprehensive landscape policy embracing the development of an open space system, the landscape treatment of housing and industrial areas, and the tidying up of the sites of cleared buildings that have to remain undeveloped for several years. Illustrations of how these problems might be dealt with are given in chapter 15.

c Teesside lacks the level of services (shopping, commercial, professional and cultural) that might be expected to be found in an area of nearly 500,000 population. To some extent this is a consequence of the relatively low level of family incomes and of a distribution of family incomes in which the higher income groups are poorly represented. But it is also the result of Teesside still remaining an area with local loyalties to the shopping centres of Middlesbrough and Stockton. The solution to this will be partly in urban structure policy creating a road framework that will serve to integrate Teesside, partly in the success of employment policy in creating an employment structure that will give more opportunities for work, especially for women.

d The communications system of Teesside also has weaknesses though their effects are masked to some extent by the prevailing relatively low level of car ownership. The weaknesses lie mainly in the road system: poor access to certain industrial areas, especially along the south bank of the Tees; congestion at the approaches to the main bridges across the Tees; poor access through Teesside for the main trunk roads such as the A19 and the A66. Some of these weaknesses will be rectified by commitments for road improvements; others await the construction of a coherent primary road system as part of urban structure policy.

4.43 Current planning policies, commitments and autonomous changes have determined most of the likely changes to the urban structure of Teesside for the next ten years. If a measure of housing redevelopment and rehabilitation is included with these, a lot will have been done to improve the quality and the efficiency of the urban structure and Teesside will be a better place in which to live. But two of the weaknesses would not be remedied and might even be exacerbated if further action beyond the committed development is not taken during this period.

e The committed schemes for the improvement of the roads of Teesside are not sufficient to cope with the problems set by the growth of population in the Nunthorpe area which will overload the existing roads to central Middlesbrough; nor will they make for reasonable access to the new industrial employment area south of Stockton and at Eaglescliffe especially from the residential areas south of the river Tees at Thorneby, Middlesbrough and Nunthorpe.

f The committed schemes for shopping development at Stockton, Middlesbrough, Billingham and Thornaby may have the effect of continuing the division of Teesside into a series of separate localities.

4.44 The total effect of the commitment in comparison with the forecast levels of population and employment by 1991 is given in table 4.2. On balance land for

Table 4.2. Population and employment, 1966-91 ('000/a)

	1966	1981	not a matter of change, 1966-91	
				location not yet decided
employment	185	317	+132	+45
manufacturing	87	147	+60(1)	+32
services	101	169	+68(2)	+13
dwellings	149	231	+82(3)	+42
population	472	705	+233	+140

Notes: (1) includes 6,000 jobs in heavy industry at Seal Sands;
(2) includes 5,000 jobs in several Government offices and Teesside University;
(3) includes land for 91,000 new dwellings offset by a net overlap of 23,000 dwellings.

48,000 dwellings or 5,000 acres still has to be found if the regional policy is to be attained. Proportionately much less land remains to be found for industrial development because of the weight of the commitment in urban Teesside.

4.45 The amount of land that will have to be recommended for development in the longer term, both industrial and residential, therefore gives the basis for an opportunity to explore new paths for the urban structure of Teesside. The other opportunities arise from seeing the potential strengths of Teesside as the basis for an urban structure policy.

a Resources still remain under-used that could provide for further development of heavy industry. These are the potentiality of the river and port to accommodate large vessels; the unclaimed land at Seal Sands and Bran Sands; the water potential of the upper Tees valley although this could be in conflict with amenity interests; and land west of Stockton provided that the industry did not add to atmospheric pollution.

b The nearby presence of attractive countryside containing features such as river valleys that could be made into country parks and a little further away the North York Moors National Park.

c The character of the development of Teesside so far has been relatively dispersed. Although 80 per cent of the jobs on Teesside are within the riverside belt, they occur at four main locations within that belt. The developed parts of Teesside are penetrated by open tracts of land particularly those to be occupied by the new A19 road. And the oldest, densest housing areas of Teesside are those in greatest need of renewal. This dispersed pattern of development, and the possibility of further change arising from the need for renewal, gives the urban structure the flexibility to accommodate future changes in a comparatively easy manner.

Alternative strategies for development

4.46 Seven alternative strategies are put forward for the possible future development of Teesside by suggesting locations for the additional population and employment for which land has not yet been committed. Each was formulated broadly within the general constraints of regional policy and the preceding analysis of urban structure; together they illustrate alternative forms and directions for future development. Formal considerations included peripheral development, linear extensions to the built-up area, a new town and dispersed settlement; and the directions were northwest; west; southwest; and south.

4.47 It would have been possible to describe more strategies but these seven illustrated all the main principles of development. For instance it was necessary to analyse only one strategy to evaluate the main

problems likely to arise from new town development, whatever its precise location; and it was necessary to examine only one northwestern strategy to understand the main problems of growth in this direction, whatever the form of development.

4.48 As was described in chapter 1, the formulation and evaluation of these strategies was carried out before the final analysis of data from the surveys had been completed. They relied on preliminary, crude predictions which differed from the final forecasts described in chapters 2 and 3 to the extent shown in table 4.3. The main

Table 4.3. Differences between preliminary and final predictions, 1981 (1987x)

	alternative strategies	final strategy
population:		
existing and committed to be located	700	790
	564	643
	136	140
employment:		
existing and committed to be located	238	217
	241	272
	54	45
car ownership:		
vehicles per 100 persons	34	38
average modal split:		
% of trips by public transport	36	21
total weekday person-trips:		
by public transport	1,394	1,446
by private transport	714	323
	1,260	1,143

Note: person-trips are by residents only.

reasons for the difference between these two sets of figures and analyses were that as the final predictions were derived using data from the local surveys it became apparent that:

a the preliminary estimates of population still to be located were too low. The likely number of households in the preliminary prediction used headship rates based on an assumed rate of change since the 1951 Census of Population but subsequent analysis of survey data suggested that headship rates on Teesside are actually rising more rapidly. The preliminary figures also assumed an average occupancy rate of persons per dwelling for the whole of Teesside, whereas subsequent analysis showed that the rates were likely to be higher in the dwellings constructed after about 1981, that is those still to be located;

b the preliminary forecasts of employment underestimated the likely total future size of the supply of labour by underestimating activity rates; and underestimated the amount of service employment whose future location could be predicted by reference to the distribution of population and known commitments for hospitals, district centres, and the like;

c an empirical approach was used for predicting modal split in the alternative strategies using assumed data. The predictions in the final analysis were derived from actual survey data and showed that the use of public transport would be substantially lower. This was offset by the fact that the final prediction of the total number of person-trips was also lower than that forecast in the preliminary estimates; and that the final assignments made a more careful statement of the relative amounts of traffic on the primary and secondary road systems. The consequence of these refinements was that the volume of traffic on the primary road system in the final analysis was lower than that in the preliminary strategies.

4.49 Nevertheless these differences do not invalidate the use of the alternative strategies to illustrate the

implications of the various forms and directions of growth. The conclusions of the evaluation and the consequent derivation of planning objectives given in chapter 5 would have been even more strongly reinforced if the final, revised figures had been used. This is because the key issue for structure proves to turn on the relative proportions of population and employment whose future location is already determined by commitments.

4.50 The actual figures of population and employment used in the seven strategies are given in tables 4.4 and 4.5. Many of the new needs needed to give a primary

Table 4.4. Distribution of population to be located, by strategy (1987x)

district	A	B	C	D	E	F	G
1. Middlesbrough				10			
4. Billingham				23		51	
7. Nunthorpe-Merton			10	25	34		
8. Eaglescliffe-Yarm	316	89	5	28	25		41
9. Billington						40	
13. Garsborough			16	5	2	4	26
14. Stokesley			41	100	53		18
TOTAL	118	115	118	116	118	118	118

Note: districts 2, 3, 6, 5, 11, 12 have no allocations.

Table 4.5. Distribution of employment to be located, by strategy (1987x)

district	A	B	C	D	E	F	G
2. Stockton						14	
4. Billingham				12		21	
7. Nunthorpe-Merton			7	10	28	22	2
8. Eaglescliffe-Yarm	54	24	2	9	8		17
9. Billington						11	
13. Garsborough			7	5	4	3	8
14. Stokesley			18	41	21		28
TOTAL	54	54	54	54	54	54	54

Note: districts 1, 3, 6, 5, 11, 12 have no allocations. There were eight differences between strategies in the location of certain central services, though not sufficient to materially affect the analysis.

road system are similar in each of the alternative strategies. The common elements are those required to serve the existing and committed development in cladding:

a the realignment of A66 and A1085 to provide an east-west route through Teesside close to the south bank of the river Tees;

b the proposed South Teesside Parkway with an extension westwards to Eaglescliffe in all except strategy A;

c the proposed realignment of the A19;

d a new Merton motorway giving access from the committed development at Nunthorpe-Merton to Middlesbrough central area;

e a Stockton outer ring road, joining the A66 with the A19 near Billingham;

f a Stockton motorway giving access to Stockton central area.

Strategy A: westwards to Darlington (figure 4.2)

4.51 The basis of this strategy is in the forecasts of employment growth and the potential of the Eaglescliffe area for economic development. The same characteristics in fact could be applied over most of the corridor between Eaglescliffe and Darlington. Indeed Eaglescliffe has its counterpart in the southeastern suburbs of Darlington; and the A1(M) provides access from the south to Darlington in a similar manner as the se-



Figure 4.2 STRATEGY A: WESTWARD TO DARLINGTON

aligned A19 would to Teeside, industrial development in this corridor with the appropriate local road improvements could draw its labour supply from Darlington, Newton Aycliffe and the Durham coalfield as well as from Teeside. The area of suitable land is in excess of the employment requirements of Teeside and Darlington, if present forecasts of growth in population by natural increase are borne out. Growth is confined to the eastern end of the corridor at Eaglescliffe and Urby Nook.

4.52 The first problem is location for the associated residential development. If accessibility to work is to be good, residential areas need to be close to industry. But the environmental quality of the land north of the river is generally poor until the vicinity of Redmarshall is reached, five miles to the north. Existing communications between residential areas here and either the central area or Eaglescliffe would require considerable improvement. Also the noise cone of the airport lies mainly northeast over much of this land.

4.53 The alternative location for new housing is south of the river Tees where it would have considerable advantages. The river Tees flows in a series of deeply incised meanders between Darlington and Yarm and the steep sides of the valley are well wooded and beautiful. The land between the meanders is flat and could be developed in such a way that whilst the residents would have easy access to the Tees valley for recreation, their dwellings would not be visible from the river. Sufficient land could be developed in this manner to accommodate more than 115,000 people should this be necessary.

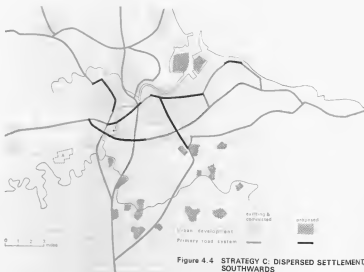
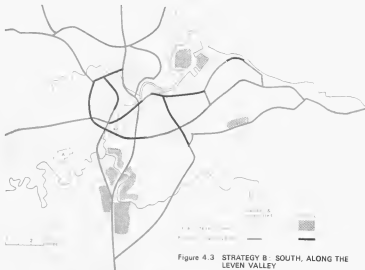
4.54 To cater for the likely traffic, the line of the Parkway would have to be adjusted to continue along the

line of the A1044 and the B1286. This would connect the new development to the A1(M) in the west and the A19 spine in the east. Two new river crossings are shown. The first bypasses Yarm and Eaglescliffe to help preserve the amenities of their existing communities, links the A19 to the proposed alignment of A85 and also gives good access between the housing and the Eaglescliffe industrial estate. The second crossing connects the new development to Darlington and the industrial estate which is growing up on its eastern flank. The remainder of the main road system is primarily that considered to be necessary to serve the existing and committed development in 1991.

Strategy B: south along the Leven valley (figure 4.3)

4.55 This would have the same initial basis as strategy A, that of recognising the employment growth potential of Eaglescliffe but in this case confining development to the Survey Area. The residential areas extend southwards from Yarm following the proposed line of the A19 diversion, in this way most people travelling to Eaglescliffe would use the A19 and the South Teeside Parkway. The major transportation difficulties would be the extent to which increased capacity may be required on the new A19 bridge crossing the Leven valley and whether the traffic generated would justify the high cost of a new Tees crossing to relieve Yarm High Street of through traffic. The remainder of the network is basically that required for the existing and committed development of central Teeside.

4.56 This strategy, however, is also based on the landscape potential of the Leven valley between the



Tees and Hutton Rugby. If this area was to be developed the Laven valley could be developed into an important landscape feature threading through the residential areas. In this way, a population of 100,000 would be accommodated along the Laven valley. But the furthest extension of the line of development would be about ten miles from Middlesbrough and fifteen miles from Northallerton. The balance of 16,000 population is located as an extension of Guisborough rather than as a further extension of the linear development.

Strategy C: dispersed settlement southwards (figure 4.4)

4.57 This strategy assumes that the entire additional population of 116,000 would prefer to live in small dispersed communities even if this means a longer journey-to-work. The compensating advantages would be the possibility of living in the most attractive natural environment under conditions in which the characteristic natural advantages are not greatly diminished; and those supposed to follow from living in a small community. The communities nevertheless have to be large enough to sustain basic services such as primary education. In addition some of the larger more accessible places would have to provide more specialised services including district shopping centres.

4.58 The communities would be located mainly along the Laven valley and beneath the Cleveland escarp, the criterion for site selection being aspect and prospect. Because of its dispersed pattern, this strategy has been assumed to use the existing and committed road system with no substantial new roads to serve these communities.

Strategy D: compact development (figure 4.5)

4.59 This strategy locates development in three areas adjacent to the built up area of Teesside. The starting point for selection was to seek areas of good environmental quality close to urban Teesside though consideration of travel-to-work also entered into the selection. More growth would be located at Nunthorpe and Manton where an area of otherwise moderate landscape quality is made attractive by its location in a basin lying between Eton Moor and Roseberry Topping, with its southwestern edge marked by the Cleveland Dyke ridge. This area also lies near to a large area of land where residential development is committed and close to the industrial area on the south side of the river. It lies beside an existing railway and further justifies the provision of the Manton Motorway parallel to the railway made necessary by the committed residential development and the need to afford relief to the existing main roads (A172 and A176) to Middlesbrough central area.

4.60 Environmental quality is lower on the other two sites though other factors compensate for this. That west of Woburn is in close proximity to Wynyard Forest, an area of attractive parkland in private ownership, and extensive woodland. It also serves to improve the balance of work and people either side of the Tees by locating new housing near Billingham and Seal Sands where there will be an increase in employment. Easy road access is given by the proposed improvements of A10, A668 and the construction of a new road to Seal Sands.

4.61 The site at Ingilby Barwick is less satisfactory in

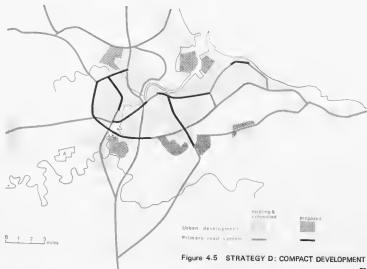


Figure 4.5 STRATEGY D: COMPACT DEVELOPMENT

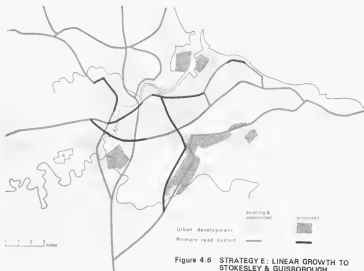


Figure 4.6 STRATEGY E: LINEAR GROWTH TO STOKESLEY & GUISBOROUGH

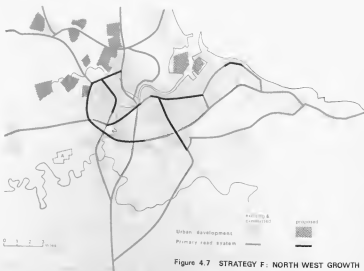


Figure 4.7 STRATEGY F: NORTH WEST GROWTH

its environment because of its exposed, treeless landscape. But it is fairly close to the lower Leven valley and is bounded by the river Tees at a point where landscape improvement would be possible. Its main advantages lie in its location close to the committed growth in employment at Thornaby and Eaglescliffe with easy access to the primary road network via A1045 and A1044.

Strategy E: linear growth to Stokesley and Gileborough (figure 4.8)

4.62 This strategy has much the same general basis and geographical location as D but is modified so as to set up the conditions which might, in theory, make for more effective use of an existing rail service into an area of committed planned development using as its main axis the A172 to the south and the Merton Motorway to the north. The southern part of the A172 is currently being improved and would provide an alternative to A19 as a southern entry to Teesside. It would become a reasonable alternative location for light industrial development to that based on the A19 axis, although any industrial estates in this area would have to compete with the established momentum and locational advantages of Thornaby and Eaglescliffe.

4.63 The aim of this strategy would be to locate a large population within walking distance of a possible public transport system. This could be either road or rail based. By forming this strong corridor of communications directed towards the regional centre and the industry on the south bank, the system might provide a reservation for potential growth beyond 1991 when the population could be such that freedom of choice of

mode of travel to certain areas were no longer possible. By varying the balance between public and private transport, the system seemed to offer flexibility for long term planning.

Strategy F: northwest growth (figure 4.7)

4.64 The main weight of recent growth, most of the committed development and the easiest access to the coast and National Park are on the south bank of the Tees. The situation will probably make for a pattern of daily travel-to-work that would be ideal in character; a northward movement in the mornings and a southern in the evenings. Future growth in employment is mainly on the south bank (except for Eaglescliffe, which does not fit the simple north-south pattern) but there is, nonetheless, some argument for examining the situation arising from placing the additional population growth on the north bank.

4.65 This strategy therefore would utilise the capacity of the proposed road improvements to A177 and A669 to investigate what the location of a large population on the north bank might mean in terms of job opportunities and in the number of trips crossing the river. The best environments have been selected for this growth. This means that some of the population would be in areas away from the main primary roads for which improvements are committed.

Strategy G: a new town at Stokesley (figure 4.8)

4.66 This strategy would involve building a new town at Stokesley. A new town in this context means a



Figure 4.8 STRATEGY G: A NEW TOWN AT STOKESLEY

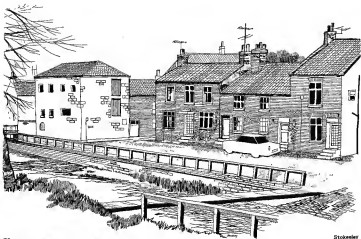
community large enough to have its own education and shopping centres and physically separated from the main built-up area of Teesside. Two main factors determine the possible size and location of such a new town. Firstly, there is not sufficient employment growth potential on Teesside to sustain a self-contained new town particularly as the number of firms likely to be displaced and who would wish to relocate in new premises is very small. Much of the expected growth in manufacturing or office employment necessary for the future prosperity of Teesside will take place within the existing built-up area. It will need considerable action to attract to Teesside the quantity of employment necessary to achieve regional growth targets. The main advantages to the incoming manufacturer in light industry will be, as in the past, the existence of labour reserves. The future need will be for multi-employing firms willing to recruit from the whole of Teesside. A new town therefore would have to be part of that labour market in a situation which would permit easy travel-to-work between it and the rest of Teesside. The problem becomes intensified if the labour market is differentiated into separate markets for blue and white collar workers or for males or females. For example it would be difficult to provide male white collar jobs in

a new town given the limited number of such jobs likely to be available on Teesside.

4.67 Secondly, there is the argument that the new town would have to be sufficiently small to prevent the development of a central area in competition with the proposed Middlesbrough central area. For this reason its growth is limited to 80,000 by 1991 by which time the Middlesbrough central area policy should have been implemented.

4.68 The other factors affecting the new town would be similar to those for strategy E. Thus a southern location is preferable both for environmental and for industrial considerations provided labour supply is adequate. The site at Stokesley is close to good communications with Teesside via the A172 to the north and B1395 to the Parkway and thence to the A19 diversion. A new town in this location, however, would generate strong traffic demands for the extension of the Teesside primary road system.

4.69 The remaining population has been located at sites that meet local opportunities within Teesside, Guisborough being a highly attractive environment and Ingleby Barwick being in close proximity to employment opportunities.



Stokesley

5 Planning objectives for Teesside

Summary

a The location of additional development was examined by a comparative evaluation of the seven alternative strategies taking into account the locational needs of employers and workers; housing and environment; the regional centre; sewerage; and the transportation system. The evaluation showed that because of the weight and the pattern of future committed development and the particular circumstances of Teesside, future development should follow a relatively compact pattern rather than any form of dispersal, with something of the order of the following distribution of additional population:

- (i) about 50,000 north of the river, near Wolsley;*
- (ii) a variable amount south of the river, near Thorneby and Yarm, that should be not less than 60,000 from employment considerations though it might have to be less because of transport and environmental factors;*
- (iii) not more than about 60,000 in the Nunthorpe area, if there was to be a free choice of model split;*
- (iv) a relatively small amount, about 5,000, in the newer parts of the coast, and additional employment in Cleveland.*

b These conclusions of this preliminary analysis were embodied in a provisional urban plan. This was later modified to give the final land use plan when actual survey data were available and when local studies of key areas had been completed. The main changes were for a reduction in the proposed population of the Nunthorpe area, and a substantial increase in the Levenside area near Thorneby and Yarm.

c Various alternative transportation systems were then compared within the pattern of development. Different levels and types of public transport system were examined, and the effects of restricting the use of private transport calculated. These showed that the dispersal of activity throughout the urban structure, and the predicted high level of car ownership led to a high proportion (80 per cent) of travel being by private vehicle by 1991. In particular:

- (i) any attempt to maintain a high level of public transport would not so reduce the proportion of travel by private car as to offset the increased costs of the public transport system;*
- (ii) any attempt to reduce the proportion of travel by private car must therefore rely on restricting people's freedom of choice of means of travel;*
- (iii) a general restriction on use of the private car would not be warranted;*
- (iv) however, the amount of travel by cars to Middlesbrough central area should be restricted by control of the supply and price of parking accommodation in this area;*
- (v) the public transport system should be largely by*

bus services as dispersion of activities on Teesside is not well suited to rail transport.

d The final summary of the planning objectives of the urban structure is:

- (i) a diversified employment structure;*
- (ii) conservation and proper use of the water potential and shipping capacity of the river Tees; the reclaimable land in its estuary; and the countryside;*
- (iii) a compact urban form, but within this, a dispersal of activities and a relatively low overall density of development;*
- (iv) a transport system which will accommodate a high usage of the private car combined with the maintenance of approximately the current level of public transport services;*
- (v) a well designed and varied stock of dwellings and housing environments with good access to various activities, particularly a regional centre.*

Derivation of the planning objectives

5.1 The planning objectives for Teesside's urban structure policy were derived from an analysis made in three stages. The first stage was concerned with the objectives that should govern the future distribution of activities and the direction and form of development. Several of these objectives were demonstrated in earlier chapters. The remainder were adduced from a comparison of the seven alternative strategies for the distribution of the residential areas, employment and industrial estates whose location is not yet committed. The comparison was concerned with:

- a the location of industrial estates to meet employers' requirements;*
- b the location of employment to meet workers' needs;*
- c housing and environment;*
- d sustaining the development of a regional centre at Middlesbrough;*
- e sewerage;*
- f land use and transportation.*

5.2 The comparison was made at a relatively broad level of generalisation in which Teesside was divided for statistical purposes into a system of 70 coarse zones. This stage concluded with the preparation of a provisional urban plan embodying the planning objectives so far derived.

5.3 The second stage involved a more detailed examination of the provisional urban plan in the light of:

- a actual survey data which had not been available previously;*
- b local planning studies of key areas for future development; possible road alignments; and policies such as that for the proposed country parks.*

5.4 The social survey data were that reported in chapters 2 and 3, and the local planning studies are described in Part III of this report. As a result of this work, a final land use plan for urban structure was prepared, involving some modification of the provisional urban plan although the planning objectives remain unchanged. This final plan was described by a more detailed set of predictions in which Teesside was divided into a system of 211 five zones.

5.5 These predictions formed the essential basis for the third stage in defining planning objectives. In this the objectives for a transportation policy to serve the selected land use plan were determined. The analysis went through the following:

- a the nature of the model split between public and private transport;
- b the development of a primary road system;
- c a comparison between different public transport systems;
- d the selection of a transportation system.

5.6 The full list of specific objectives for urban structure policy could now be described under five headings:

- e employment structure;
- b conservation of natural resources;
- c urban form;
- d transportation;
- e environmental quality and standards of living.

Evaluation of alternative land use strategies

Industrial estates; employers' requirements

5.7 It was shown in chapter 2 that the ability to attract light manufacturing industries that are labour intensive is fundamental to the future growth of Teesside. Land is already available or committed for about 31,000 workers; a further seven industrial estates will be required, sufficient for the employment of about 22,000 workers by 1991. They should mainly employ male workers and the principal factor bringing them to Teesside will be the availability of a supply of labour capable of being trained in particular processes. Their main requirement, therefore, will be ease of access from residential areas. Provided that a good primary road system has been constructed and public transport is available, this requirement could be met in most parts of urban Teesside and in the main growth areas south and southwest of the existing built-up area.

5.8 This type of employer is likely to rely entirely on the roads for the supply of materials, the dispatch of his finished products and, probably, managerial communication between his factory on Teesside and associated factories in other parts of the country. Most of these linkages will be with regions to the south of Teesside. Transport costs are relatively small: a small proportion of total costs for this type of firm that little financial advantage is gained from one location rather than another on Teesside. But there are probably strong psychological advantages in being in a location on Teesside which appears to be more accessible from the south and which avoids the congested areas of Teesside along the river, particularly the bridges.

5.9 The best locations are at the southern entrances to Teesside within sight and access of the primary road system along the existing A19, the realigned A19 and the existing A172. The centralized industrial estate at Thornaby and, provided the roads are improved, that at Eaglescliffe fit into the pattern. Five of the seven strategies, including that along the Leven valley (B), the new town at Stokesley (G) and, probably to a

lesser extent, the other strategies with a southward orientation (D, D and G) would meet this requirement but strategies with a north or westward orientation are less favourable.

Employment: workers' requirements

5.10 The main interest from the workers' point of view for the location of employment is that there should be as wide a choice of jobs as possible open to an individual without his changing his place of residence, making due allowance for the effects of the competition for the limited number of available jobs from residents in other parts of Teesside. This concept can be described in a simplified way by a comparison between the number of workers resident in an area and the number of jobs available in that same area. A negative balance indicates that an area is deficient in employment opportunity and a positive balance indicates that it has a surplus of jobs. This method was used in chapter 4 to establish the job balance in each of the fourteen divisions of Teesside. The analysis showed that the net effect of the existing and committed developments in population and employment would be to create a surplus of about 20,000 male and 6,000 female jobs in the area of Stockton, Thornaby and Eaglescliffe, sufficient to support an increased population of over 50,000 people. But there would be a shortage of about 18,000 male jobs and 5,000 female jobs in Cleveland and Gillingham.

5.11 A more precise measure of this concept was devised in the form of a mathematical model which calculated an index of job opportunity for each residential zone in an urban structure, and an average value of the index for the urban structure as a whole. The index brought together, for a particular zone, the number of workers resident in that zone; the number of jobs in that zone and in all other zones in the urban area; the travelling distance between the residential zone and each of the other zones in which there were jobs; and the competition for those jobs from workers resident in other zones.

5.12 The index was devised so that the higher its value for a particular residential zone, the greater would be the job opportunity for the resident workers of that zone; that is, the greater would be the number of jobs, the closer their proximity, and the less would be the competition from the residents of other zones. Values of the index would thus be high in zones such as at Gillingham where there is a small community living close to a large employment area; or they would be relatively high in small, isolated residential zones which were self-sufficient for labour, but would be very low in residential suburbs a long way from employment areas.

5.13 The values of the job opportunity indices were calculated for each of the seven strategies. The comparison showed three marked features of Teesside. First, a strategy for development including a physically separate new town such as at Stokesley (strategy G) would result in a significantly lower degree of job opportunity than any other type of strategy. This is because so much of the actual employment is committed to reside in the riverside tract of industrial land, compared with the possibilities for dispersing the resident population. Thus any new town would be unlikely to be self-sufficient and would rely on the principal employment centres of Teesside. The residents of the new town would suffer from the competition for jobs from the residential suburbs closer to the employment areas.

Second, a strategy (such as E) which provides relatively more jobs in the vicinity of Nunthorpe (or points further east) leads to a higher measure of job opportunity by offering a greater choice of employment to the areas of Cleveland and Guisborough that are deficient in jobs. Third, with these two exceptions, the precise form and location for the additional population and employment still to be found a location has comparatively little effect on job opportunity. That is, in general, the very large proportion of population and employment whose location is virtually committed is the overriding factor influencing the further development of Teesside.

5.14 Within these general conclusions it is possible to be more specific on the following points:

a land for additional employment should be located in East Cleveland, Seaburn and Middlesbrough. If these areas are to be given a reasonable level of job opportunity; this would be a greater number of jobs than was suggested in any of the seven strategies;

b land for additional employment should also be located near Nunthorpe; this would have the advantages of increasing job opportunity as far as East Cleveland, and of being in a location likely to be attractive to employees;

c land for additional population should be located in the southwest, near the Eaglescliffe and Thornaby industrial estates, to take advantage of the high levels of job opportunity given by those estates;

d there is possibly an argument for additional land both for employment and population north of the river Tees but this situation is complicated by the proximity of Hartlepool and the industrial areas of Greatthorn, outside the Survey Area, and the fact that the industries of Billingham are supported by inward travel-to-work from Hartlepool and the Durham conurbation.

Housing and environment

5.15 The first factor in the selection of areas for new housing must be the actual character of the site and its capacity to form the basis of a high quality of environment after development, including the layout and design of the buildings and the landscape treatment of the open spaces between buildings. The types of site that best give this basis on Teesside are those which have an undulating topography; good, relatively light soils; tree cover including hedgerow trees; freedom from atmospheric pollution and liability to mist and fog; and, possibly of increasing importance in the future, freedom from the noise likely to be generated by Teesside Airport or the noise that will be generated by the traffic flows of the primary road system.

5.16 The second factor will be the location of the new housing areas so as to provide a variety of types of environment. These will include coastal environments and those of the small towns and villages such as Guisborough and Stokesley, although both are already provided for to a large extent by the committed development. Suburban environments are also provided for but a third type of environment does not yet exist to a significant extent. This is the location within sight of, and in close proximity to, a major area of open space such as would be given by the lower Leven valley if it were developed as a country park.

5.17 The areas most adversely affected from the environmental point of view were not shown for housing development in the alternative strategies. They were land southwest of Stockton and west of Eaglescliffe affected by aircraft noise and with a flat, treeless topography; land east and northeast of Billingham,

affected by atmospheric pollution; and the Smeaton polders northwest of Stokesley, relatively flat and treeless and also of good agricultural quality.

5.18 Two strategies could be dismissed on environmental grounds. There is no evidence to suggest that there would be sufficient demand for living in rural conditions to sustain the degree of dispersal envisaged in strategy C. It is arguable anyway that this degree of dispersal would impair the agricultural quietness of the countryside south of Teesside by the increase in traffic and the amount of banking that would be needed. Strategy F, northwest growth, may also be dismissed because of the need to develop a substantial area of land with relatively poor site characteristics and few compensating advantages.

5.19 Three areas of land stand out as having favourable site characteristics and being well located to contribute a variety of environments. They formed elements in several of the strategies:

a land between Wolsiton and Wynyard adjoining Billingham Beck and Wynyard Forest which are recommended for development as a country park;

b land south of Yarm, close to the proposed Leven valley country park;

c land in the vicinity of Nunthorpe and Guisborough, close to the National Park, accessible to the coast and very close to the proposed Great Ayton Moor forest park.

Sustaining a regional centre

5.20 The case for a regional centre at Middlesbrough was argued in chapter 3. One of the features that would make for the success of this policy would be the distribution of population and communications, locating the maximum possible population within an accessible hinterland for Middlesbrough.

5.21 The strategies using Eaglescliffe as their basis (A and B) both lead to much of their population being located more than ten miles from Middlesbrough as has that with a northwestern orientation (F). That is, none of these strategies create the conditions which would favour a regional centre at Middlesbrough. The other strategy needing comment is that for a new town at Stokesley. The use of a sales distribution model (described in chapter 6) shows that a strategy such as this would generate a very great demand for central area shopping facilities at Stokesley to a degree that would be quite incompatible with the commercial viability of the proposed redevelopment and extension of Middlesbrough central area. The other strategies would probably satisfy this criterion.

Sewerage

5.22 The future sewage and sewerage system for Teesside is being studied by J. D. & D. M. Watson, Consultant Engineers, as part of their report on proposals for treating the river Tees from pollution. Their recommendation will be for a new system draining to a sewerage works at Eton, serving the whole of the new Teesside County Borough (except Redcar) and some of the adjacent districts, especially those capable of gravity drainage to the Teesside system, or capable of being pumped into the system at a comparatively low cost.

5.23 These strategies (D, E and F) would be capable of being drained mainly into the Teesside system, from a preliminary examination, Strategy F, draining through Billingham Beck valley, would probably be the most

economic, whereas strategy E would require some pumping. The remaining four strategies are such that most of the additional development would require special arrangements as they could not be drained into the Teasdale system. In particular, there could be difficulties in preparing drainage schemes for strategies A and C, though these would probably not be major difficulties for strategies B and G.

Land use and transportation

5.24 A simplified procedure was devised for predicting and comparing the flows of traffic likely to be associated with each of the seven alternative strategies. In this, a prediction was made of the amount of traffic by public and private transport likely to be associated with a given distribution of population, employment and car ownership; and a given level of service of public transport. Then the operating costs were calculated making alternative assumptions. Both included an estimate of the running costs of all vehicles and public transport costs, namely 8d. per vehicle mile for cars, 3s. per vehicle mile for buses and a *pro rata* estimate for rail. But, while one included the opportunity costs of all personal travel time, the other included only travel time during working hours. The traffic was assigned to the simplified, primary road system of each scheme and the capital costs of constructing the required type of system calculated. The problem of assessing the cost of running vehicles in different traffic conditions was simplified by allowing, in the calculation of capital costs, full provision for the traffic even if this meant that a four-lane dual carriageway road was costed where the probability was that only a two-lane dual carriageway road would be built.

5.25 This procedure gave only a first approximate indication of the costs and model split, but they are sufficient for comparing the seven alternative strategies. The problem about capital and operating costs is that their impact is felt in different ways. The capital cost is that of providing, over a period of twenty-five years, the road system needed in 1991. It falls almost entirely on the public sector whereas operating costs, expressed as an annual cost, are met by the private individual. A major factor affecting the capital cost of a transport system is the model split, that is the proportion of person-trips made by public and private transport respectively. At present, 65 per cent of the person trips are made by private transport. This is a rather high ratio for the present level of car ownership which is about 12.7 cars per 100 persons. It is consistent with the fact that employment is relatively dispersed along

the river Tees and that population is even more widely scattered. Teasdale lacks the great focus of employment found in many large urban areas, and therefore the circumstances which lead to the most intensive use of public transport.

5.26 In the future, car ownership is likely to rise on average to about 26 cars per 100 persons, by 1991; population from 479,000 to 704,000; and employment from 198,000 to 318,000. But as has already been noted, the location of a great deal of the growth in employment is already determined by current decisions, commitments and long-term trends, compared with the amount of future population whose location can be predicted. More importantly, much of this growth in employment will still be in the riverside belt of employment whereas the population will be even more widely dispersed than at present. Finally, although employment will be localised in the riverside area, it will become more widely dispersed within that area. That is, all the current trends are tending towards further dispersal of population and employment and hence favour a continuing high model split in favour of private transport. In fact, this is borne out by the comparative evaluation of the strategies given in table 5.1.

5.27 The most significant results from this preliminary set of forecasts were:

a If people were given complete freedom to choose between private and public transport, and if they choose in the same way in 1991 as people in similar circumstances would have chosen in 1966, then the future model split is likely to rise from 65 per cent in 1966 to about 85 per cent in 1991 by private transport. It was shown in chapter 3 that the probable rise in the model split is likely to be considerably higher, when more detailed methods of prediction and actual survey data are used. These are discussed in the next section of this chapter;

b a very important result was that the form and direction of the location of future development has virtually no effect on the final model split merely because the overriding factor in a free choice situation is car ownership which was taken to be the same in all seven strategies. The other important factor was that the location of more than 80 per cent of the population and employment was the same in each of the seven strategies;

c an attempt was also made to predict the consequences of a forced model split such that only 30 per cent of the trips were made by private transport. Such a restriction would not be practicable but the calculations did underline that the relative merits of the seven strategies would remain the same in such a situation, again to a very large extent because 80 per cent of the

Table 5.1. *Competitive transport evaluation of strategies (1991 prices)*

strategy	A	B	C	D	E	F	G
total person-trips per day (million)	1.37	1.28	1.60	1.28	1.05	1.08	1.32
average trip length (miles)	5.4	5.1	5.2	4.8	4.8	4.9	6.7
free model split							
model split, % private transport	65	66	65	64	64	64	64
person-miles by public transport (million)	3.72	3.44	3.68	3.27	3.26	3.48	4.80
person-miles by private transport (million)	5.93	6.42	6.61	6.55	6.55	6.03	8.27
total person-miles per day (million)	50.68	5.96	10.50	9.12	6.36	5.85	12.85
(a) annual operating cost incl. leisure time (£ million)	108	85	121	78	56	57	90
(b) capital cost, primary roads (£ million)	142	128	122	108	126	117	90
forced model split							
model split, % private transport	30	30	30	30	30	30	30
(c) annual operating cost incl. leisure time (£ million)	126	120	127	110	112	155	113
(d) capital cost (£ million)	79	18	19	18	53	18	—
comparison between free and forced model split							
annual saving in operating costs (a-c), (£ million)	23	21	20	18	17	58	20
total incl. capital cost (b-c), (£ million)	522	167	103	88	155	58	—

Note: —, not calculated.

population and employment is common to all seven strategies;

d a restriction of this order would reduce the capital investment required in new roads but it would also result in a substantial increase in net annual operating costs if these are taken to include the opportunity cost of all time spent in travelling. Only if the cost of this time is not included would there be no increase in the costs of travel.

5.28 The subject of the costs of travel is considered more fully in the next section, but it is worth stressing that the increase in operating costs arises because travel by public transport on Teesside would be slower than that by private car assuming that adequate road capacity could be provided. The increase in travel costs might therefore be represented in another way, by saying that forcing people to use public transport would decrease values of the index of job opportunity referred to in paragraph 5.11. It would make jobs effectively less accessible to the population than they would be in a situation of free modal choice because of the limitations of a public transport system and the increased amount of time spent in travel-to-work.

5.29 The specific results from the comparative evaluation show that those strategies which lead to a dispersal from Teesside result in significantly greater operating costs than those such as strategy D in which the population is relatively compact. A full dispersal to small, scattered communities such as in strategy C would result in a slightly lower capital cost than other forms of dispersal as it would permit greater use to be made of the existing road system. The analysis therefore shows two levels of capital cost:

a if a modal split of 70 per cent in favour of public transport could be induced, then the capital cost of new roads would be about £19 million, which is less than the present commitment;

b it is clear however that if the cost of travel time is included as part of operating costs, then the personal savings resulting from freedom of choice outweigh the additional capital cost of providing the necessary roads. The total cost of the new roads would then lie between £108 and £142 million.

5.30 The conclusions to be drawn from this preliminary analysis are therefore:

a the compact strategy D would be the cheapest in capital and operating costs, whatever the eventual modal split and whether or not operating costs are taken to include the costs of journey time;

b the additional costs to the consumer of forcing people to use public transport outweighs the savings from providing a cheaper road system. If, however, it were considered necessary to try and make for a greater use of public transport, a compact strategy would cause least personal inconvenience;

c the weight of the commitment in population and employment means that a very large part of the primary road system is common to all seven strategies, particularly those parts needed for the existing urban area;

d the capacity provided by capital of the committed road schemes and part of the new primary road system needed to serve the committed population are significant in suggesting locations for the additional population. This applies particularly to the following:

(i) the realigned A19 which would give the road capacity to serve development at Ingleby Barwick;

(ii) the South Teesside Parkway and the proposed Marton Motorway which could serve a larger population than is committed for Nunthorpe-Marton;

(iii) the improvements to the A177 and A688 which

could serve additional population in the Worlston-Wynford area;

(iv) the M166 bypass and the capacity of the Seltham-Middlesbrough-Darlington railway would make possible further growth at Seltham and M166.

Urban structure: preliminary conclusions

5.31 It is possible at this stage in the argument to draw certain preliminary conclusions about the best locations for the additional development on Teesside, on the basis of the comparison of the seven strategies. The most important conclusion is that the future development must be located close to the existing and committed built-up area. A wider dispersal of population, whether it be by small, scattered communities, satellite development, or large, linear extensions from the built-up area would lead to higher transportation costs, both capital and operating; would give a lower level of job opportunity for the resident population; and would lead to pressure for the development of large district centres, thus preventing the growth of a regional centre at Middlesbrough. Four areas should be considered for the location of future development within this general requirement for relatively compact development.

5.32 *Nunthorpe-Marton*: The attraction of this location and environment for housing has been demonstrated in the past by the mass of speculative development in the area and by the commitment for future development. This will require a substantial improvement in its road system to be provided by the South Teesside Parkway, the realigned A19, and the proposed Marton Motorway. But these roads, especially the last, will have a stringent constraint on their capacity. If there is to be a free choice of modal split, and if the realigned A19 is to be built as a two-lane dual motorway, then the additional population to be accommodated in this area beyond that already committed should not be more than about 80,000. The only possibility for accommodating a greater population, or for giving more flexibility, would be by greater use of public transport; or by increasing the capacity of the new A19; or by permitting heavier flows of traffic along the secondary roads to the north, such as A688 Road (A174), Marton Road (A172), or Ormesby Road (A171). This last alternative would be the most likely to occur but it would also be the least desirable as these roads pass through residential areas, near hospitals, school campus sites and shopping centres.

5.33 This area would be a good location for one or two small industrial estates, near the A172 and providing job opportunities in this district and further afield.

5.34 *Levenside*: This area could accommodate a further population of at least 80,000 in terms of the job opportunity created by the committed industrial development at Thornaby, Eaglescliffe and Bowesfield Lane, Stockton. In addition, as its location is likely to be the most favourable on Teesside for future employers, it could well take an even greater population. It is in a suitable location for sustaining the growth of the Middlesbrough central area, using the realigned A19, provided that development extends no further south than Crethorne.

5.35 There are two major problems for the future development of the area. The first concerns land north of the river Leven, mainly comprising Ingleby Barwick. The conflict here is between amenity and accessibility. Ingleby Barwick would be highly accessible to the committed industrial estates, provided

the realigned A19 and the extension of the South Teesside Parkway to Eaglescliffe are constructed. Population in this area would not make necessary an improvement to Leven Bridge, the existing crossing of the A1044, or a higher standard of capacity on the bridge to carry the realigned A19 over the Leven valley. But Ingleby Barwick is relatively flat and level and is a less suitable environment for housing even though it is next to the Tees valley which is suitable for landscape treatment.

5.36 The second problem concerns land south of the river Leven, near Yarm and Kirklington. The site conditions could make for the development of a very attractive urban environment. The problem is that if population is to grow by more than about 25,000, substantial improvements would have to be made to the bridges across the river Leven, either the A1044 or the realigned A19; and a further Tees crossing might be necessary west of Yarm, if the character of Yarm High Street is to be retained.

5.37 Wolviston: land for about 30,000 people should be found on the north bank of the Tees, west of Wolviston, near Wynyard Park and Billingham Beck. This scale of development would be needed to make better use of the road system. It would be needed, as well, to give a local supply of labour that could serve the growth of employment at Seal Sands. Even with this additional population, the Billingham district would still have an apparent surplus of employment over resident population. The real situation is different, however, as Billingham is the focus of inward travel-to-work from Hartlepool and the Durham coalfield.

5.38 Notwithstanding this possible surplus of employ-

ment, an additional light industrial estate should be developed near Wolviston to give a greater variety of jobs on the north bank of the Tees in a location easily accessible from the A19.

5.39 Saltburn, Maska and East Cleveland: The capacity of the transport system to this area, including the committed Maska bypass and the railway, would make possible a further growth of population of the order of 5,000 near Saltburn and Maska. This would be a desirable increase to provide for the population wishing to live at the coast.

5.40 The main problem of this coastal area between Maska and Loftus is that it is deficient in job opportunity and likely to become more so in the future (see chapter 4, paragraph 4.37). Further industrial estates should be provided in the area even though their location is not likely to be as attractive to employers as those sited further west, near the A172 and A19 roads.

The provisional urban plan

5.41 These preliminary conclusions were embodied in the *Provisional Urban Plan*, published in March 1967 (see figure 5.1). The decision made at that time was that land should be developed to meet the likely capacity of Nunthorpe-Marton, Wolviston, Saltburn and Maska; but that only a relatively small population should be located south of Yarm, limiting the growth to the likely capacity of Leven Bridge and avoiding the development of Ingleby Barwick. The likely disposition of the additional population and employment is shown in table 5.2.



Figure 5.1 PROVISIONAL URBAN PLAN

Table 5.2. Location of additional development, Provisional Urban Plan (1991)

district	population	employment
4. Walsiston	28	10
7. Nunthorpe-Merton	58	26
5. Englecliffe-Yeas	25	8
11. Seaborn and Nalke	8	3
12. East Cleveland	0	4
TOTAL	119	51

Definition of the final land use plan

5.42 Two circumstances led to the *Provisional Urban Plan* being modified and a final land use plan prepared. The first was the use of actual survey data as it became available in place of the assumed data that had to be used in the alternative strategies. The difference that this made to the forecast quantities of population and employment was noted in paragraph 4.48. By far the most important change was that land would be required for about 44,000 more people than had originally been estimated.

5.43 The second set of factors became evident as local planning studies were carried out at a greater degree of detail than had been necessary in preparing the provisional plan. These studies are described in Part III, and their most important conclusions were:

- a the area originally proposed for development at Nunthorpe-Merton was in a southeasterly direction towards Greet Aycliffe. For the reasons given in chapter 13, this proved less suitable than it had originally appeared. The better area for development lay between Merton and Hemlington, but the capacity of this alternative area proved to be smaller than the original one. On the other hand, the detailed transportation studies described in the next section of this chapter and in chapter 17 showed that the proposed road system would not be able to support an additional population of 60,000 as had originally seemed the case;

- b more detailed examination of the Levenside area showed that it would be possible to create the prior conditions for a suitable urban environment on Inglesby Barwick given the very strong arguments in favour of its development from the points of view of transportation and employment; and the greater requirement for land for housing shown by the revised forecasts. The means of achieving this would be by a tree planting and woodland management programme, described in chapters 14 and 16.

5.44 This more detailed work on local studies and using actual survey data reinforced the planning objectives so far determined. Its main impact was in the modifications that were necessary to the provisional plan to prepare the final land use plan. The principal modifications were:

- a a reduction in the population and therefore the service employment to be located in the Nunthorpe-Merton area;

- b the further development of Levenside as the main area for the growth of Teesside because of its environmental and locational advantages. Inglesby Barwick would be developed in the earlier stages, but in the longer term, development on a large scale would also be necessary south of the river Leven, requiring improvements to the road system, especially the A1644 at Leven Bridge.

5.45 The other modifications in the provisional plan were minor and included some further allowance for dispersed population in the rural area of Stokesley and

on adjustment to the estimated population for Walsiston. The final land use plan is described in chapter 8.

The nature of the transportation system

The transport evaluation

5.46 It was noted in chapter 3 that the average weekday number of person-trips likely to be made by Teesside residents could rise from 700,000 in 1966 to more than 1,400,000 in 1991; and if the person-trips made by non-residents are included, the total number of person-trips on Teesside could rise to about 1,860,000 by 1991 of which probably only about 20 per cent would be made by public transport.

5.47 It was noted in paragraph 5.24 that a simplified procedure had been used for predicting and analysing the future flow of traffic. This procedure was completely adequate for the purpose of comparing alternative land use strategies, where the expense of using a more accurate and detailed transportation model for a comparative evaluation would not have been justified. However, the analysis of a transportation system for the final land use plan was based upon a more accurate and detailed transportation model derived from the actual survey results and using detailed predictions of land use characteristics. Briefly, the model involves the following steps:

- a the analysis of data from the 1966 surveys and the prediction for 1991 were made in terms of the average weekday number of person-trips that would be produced by, and that would be attracted to, each of 211 zones within the Teesside survey boundary and a further 16 zones outside the boundary;

- b the person-trips were classified by three purposes: home-to-work; home-to-other activity; non-home based. Each of these categories of trip was sub-divided into those by public and those by private transport. A seventh category was trips made by goods vehicle;

- c the analysis of the 1966 data showed that the number of trips produced by and attracted to a zone was related to certain social and economic characteristics of the zone, namely:

- total number of households
- total number of resident male workers
- total number of resident female workers
- total employment
- total employment in manufacturing industry
- total enrolment in secondary and further education
- total retail sales
- total number of cars;

- d thus, if the value of each of these characteristics is forecast for each zone in 1991, it is possible to predict the number of trips likely to be produced by, and attracted to, each zone in 1991;

- e analysis of the 1966 data also showed that the division of these trips between private and public transport was related to the level of car ownership in the zone and the ratio of accessibility of that zone to public and private transport. The accessibility ratio of a zone is found by first calculating an accessibility index for the zone for public and private transport separately and then dividing the public transport index by the private transport index to give a ratio. The accessibility index of a zone of production by private transport is the sum of individual accessibilities (by private transport) to all other zones, each one being weighted by the amount of traffic being attracted to the zone in question. The accessibility from one zone to another is inversely proportional to the journey time between the two zones. In the case of public transport,

Journey time includes walking to and from the transport service, waiting time at the bus stop or railway station, and waiting time at intermediate stops;

f the modal split of the predicted number of trips likely to be produced by or attracted to each zone can then be calculated by forecasting the level of car ownership and the relative accessibility of that zone. This involves the prior determination of the type and level of public transport to be available between each pair of zones;

g the total number of trips produced by and attracted to each zone by public and by private transport are distributed between every other zone, using a gravity model procedure. Its theory is that the amount of travel between an origin and a destination is directly proportional to the attraction of the destination (as measured by the number of trips attracted to it) and inversely proportional to the difficulty of the journey;

h the distributed trips are assigned to the road and public transport networks to simulate the likely use of the system in 1991. In this process, trips between each pair of zones are assigned to a unique route which is that calculated to be the shortest in travel time by the appropriate mode of travel, while the trips assigned to each section of the network are tallied to give the total use of that section;

i the predicted traffic volumes on each section of the road system are analysed to establish what the capacity, and therefore the capital costs of construction, of the road system should be. The operating costs, in turn, are given by measuring the number of vehicle-miles involved in the travel, assuming an average number of persons per vehicle-mile, and the cost per vehicle-mile of operating the vehicle; and by measuring the total length of time involved in making all of these journeys and assuming an average cost of a person's time.

5.48 It will be clear that this procedure is both complex and lengthy. The full process was applied only once to the final land use plan. But within this single land use plan the implications of different levels of public transport service and restrictions on use of the private car were tested. The forecasts of the social and economic characteristics and the predictions of the amount of travel in the rest of this section all therefore refer to the land use and transport system recommended in chapter 6 as the urban structure policy, as were the summary predictions given in chapter 3.

The level of service of public transport

5.49 The comparative evaluation of the seven strategies showed that it might be possible to achieve a big saving in the capital cost of the road system needed by 1991, if a relatively high proportion of the traffic were carried by public transport, though this was offset by a substantial loss of personal convenience. But it did not consider whether this diversion of traffic to the public transport system could be achieved.

5.50 Analysis of the survey data showed that two factors affect the level of public transport in the free choice situation. The first is car ownership, the second the relative accessibility of public and private transport as measured by the accessibility ratio. It also showed that car ownership was overwhelmingly the more important within the normal range of accessibility ratios.

5.51 The analysis has been made in relation to a single prediction of car ownership for 1991. An increase in the amount of travel by one mode as against another can therefore only be freely induced by a comparative

improvement in the speed of travel by that mode. In order to effect a substantial diversion to public transport it is necessary to either speed up public or to slow down private transport travel.

5.52 The effect of an improvement in the public transport service was considered. Thus, if the frequency of the public transport service throughout the area were doubled the amount of travel which would freely transfer to public transport would be approximately 3.5 per cent of the total travel. This is a comparatively small overall change which would not seriously affect the order of capital cost of the road system. Further, any savings in the capital investment programme would be more than offset by the cost of doubling the public transport service.

5.53 Less radical improvements to the public transport service have commensurately less effect. The effect of doubling the frequency of the train service on the comparative use of the bus and train system is considered later. However, it can be shown that less than 1 per cent of total travel would thereby be diverted from private car to train.

5.54 It was concluded that the effect of variations within practicable limits in the level of public transport services on Teesside would have only negligible effect on the proportion of travel that would be made by private car.

5.55 The conclusion applied equally to the effect of variations in the fares charged on public transport. The accessibility ratio has been calculated on the basis of travel time only. Strictly, out-of-pocket costs (including, for public transport, the fare charged) should also be considered. The economic analysis of transportation has assumed that the opportunity costs of persons' travelling time varies between 3s. and 5s. per hour. The average length of trip by public transport was 30 minutes in 1986; the average speed of door-to-door travel, approximately 10 m.p.h.; and the average cost of travel, about 2.5s. per person-mile. Thus the out-of-pocket cost of travel by public transport is about 80 per cent of the opportunity cost of the time spent in travel. Even the provision of a completely free public transport service would not double accessibility ratios and therefore variations in fares within practicable limits would have only a small effect on the percentage of total travel by private car. This does not apply when considering variations in fare structure, for instance, to divert travel from bus to rail.

5.56 Alternatively, the choice of travel mode can be imposed by restrictions on the use of private transport. Three methods are possible:

a slowing competition to develop to the extent that traffic by private car is slowed down seriously. It is the most expensive form of restriction and cannot be a satisfactory basis for long term planning even if competition has to increase in the short term;

b parking controls, though these can be applied in an effective and feasible manner only to an area of dense development such as at Middlesbrough central area;

c the application of road pricing policies in which a charge is made for the use of road space is under active review by the Ministry of Transport. Such policies have not yet been adopted or accepted but they are theoretically practicable and would be capable of application over a wider area than would parking controls.

5.57 The need for restriction could arise in two ways. The first would be if a free choice of mode required excessive levels of capital investment. It will, of course,

always be necessary to demonstrate that any proposed level of investment would result in a saving in the total social costs of travel. Even so, the money for a capital investment in roads comes from the public purse and restrictions would have to be accepted if sufficient public money were not available for the proposed schemes.

5.58 The second need for restriction is more local in character. It would apply when a particular area, usually densely developed, cannot accommodate the traffic wishing to visit it either because of a shortage of parking spaces or because of the capacity of the local road system. This will be shown to apply to Middlesbrough central area.

5.59 It was therefore concluded:

a that the alternative public transport systems considered in paragraph 5.54 would not significantly affect the level of use of public transport and the comparative studies were made on this basis;

b that restrictive measures could affect a change in the level of use of public transport and that these should be applied if:

(i) the proposed levels of capital expenditure exceeded the money likely to be made available for a long term road plan;

(ii) the capacity of any area (allowing for redevelopment) to absorb local traffic was exceeded.

Alternative road systems

5.60 Assignments of the traffic predicted for 1991 were made to three different road networks:

A: the existing and committed road network (see figures 5.2 and 5.3);

B: the system to be recommended for 1991 (see figures 5.4 and 5.5); this was based on the road system shown to be necessary during the evaluation of the alternative strategies; and modified during the local planning studies and during preliminary assignments of the 1991 traffic;

C: a modification of network B with the addition of a new crossing of the river Tees in the vicinity of Middlesbrough Dock (see figure 5.6).

5.61 The principal alternative assignments were as follows:

a the predicted 1991 traffic assuming a free choice of modal split was assigned to network A; this showed that the current commitments for improving the road system would be unable to accommodate the predicted traffic without serious and widespread congestion;

b the same traffic volume was assigned to network B, revealing three areas of difficulty:

(i) the Tees bridge carrying the realigned A19 would have to be more than a three-lane dual carriageway. The current design allows for a three-lane dual motorway without any shoulder;

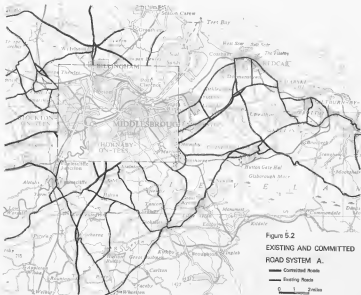


Figure 5.2
EXISTING AND COMMITTED
ROAD SYSTEM A.

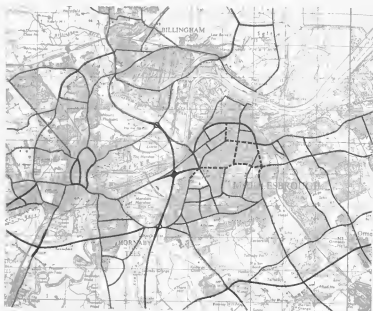


Figure 5.3
EXISTING AND
COMMITTED ROAD
SYSTEM A

Central Teesside

- Committed Roads
- - - Improved Roads
- Existing Roads

0 1 mile

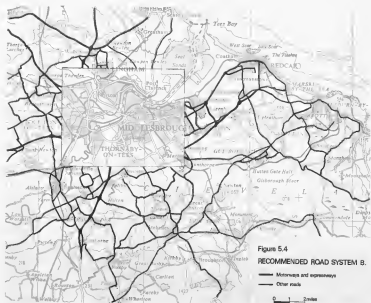


Figure 5.4
RECOMMENDED ROAD SYSTEM B.

— Motorways and expressways
— Other roads

0 1 2 miles

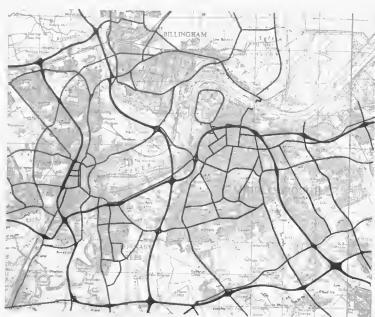


Figure 5.5
RECOMMENDED
ROAD SYSTEM B
Central Teesside

— Motorways and
expressways
— Other roads

0 1 mile



Table 5.3. Future road traffic flows (restrained as Middlesbrough central area) 1986

	vehicle-miles	vehicle-hours	average speed (m.p.h.)
network A: motorways and expressways other roads	1,462,000 4,771,000	84,400 190,400	33.8 28.1
TOTAL	6,233,000	274,800	28.7
network B: motorways and expressways other roads	2,549,000 2,730,000	45,300 145,100	41.8 29.3
TOTAL	5,279,000	200,400	36.1
network C: motorways and expressways other roads	2,872,000 2,864,000	45,100 144,800	43.1 28.4
TOTAL	5,736,000	209,900	30.3

(i) the Northern Route between the realigned A18 and Middlesbrough central area would also have to be more than a three-lane dual carriageway. This, however, would be disproportionately expensive because of acquisition difficulties (see chapter 17); moreover, this proposal, and the new Tees Bridge, are included in the first phase of roadworks that causing any additional expenditure on them to be incurred very early in the programme;

(ii) the roads leading from the Northern Route to Middlesbrough central area would have to carry excessively heavy volumes of traffic;

c. the total volume of traffic by private car wishing to use Middlesbrough central area was reduced by 13 per cent, from 88,600 person-trips with free choice, to 76,900 person-trips; this would be achieved by parking restrictions in the central area. The assignment of this retained amount of traffic to network B showed that the volumes of traffic would be in reasonable balance with the assumed speeds of traffic and road capacity over the entire system;

d. this retained volume of traffic was also assigned to network A, but it showed that the system would still be so seriously congested as to be unworkable. In fact, for traffic on this network to be in reasonable balance with road capacity and speeds, more than 10 per cent of the total trips would have to be transferred from private to public transport;

e. the future volume of traffic retained by parking controls in Middlesbrough central area was also assigned to network C.

5.62 The results of the three retained assignments are shown in table 5.3. It shows that as the level of capital investment increases so does the operational improvement to the system. Thus average speed of travel increases considerably between networks A and B because a greater proportion of traffic is carried on the

high standard road system in the latter case. The addition of a Tees crossing near Middlesbrough Dock in network C further increases the average speed of travel and also reduces the vehicle-miles of travel.

5.63 The capital and operating costs of these different systems are given in table 5.4 where it is shown that the proposed capital investment programmes would bring substantial savings in the reduction in annual operating costs. However, the expenditure and the returns occur at different points in time. Further, the results for network A make no allowance for the degree to which the resulting congestion would in itself cause traffic to be diverted to public transport or even reduced in volume. The comparison between expenditure and returns and this latter point are discussed later.

Alternative public transport systems

5.64 Public transport will therefore have to carry about 321,000 person-trips in 1991, assuming a restraint on the amount of parking in Middlesbrough central area, compared with 337,000 person-trips in 1986. However, the average trip length will have increased from 4.2 miles in 1986 to 5.3 miles in 1991 because of the dispersal of population. The total number of person-miles travelled will therefore have increased from 1,420,000 in 1986 to 1,690,000 in 1991. The public transport load will therefore be similar in both years in magnitude and in character.

5.65 Three alternative public transport systems have been compared:

X: this system is an extended and modified form of the present system of public transport. That is, bus services are provided for areas of new development on much the present method though with a modified system in Middlesbrough central area;

Figure 5.6
ALTERNATIVE ROAD
SYSTEM C.
Middlesbrough Dock
Crossing

Motorways and
expressways
Other roads

0 1000 Yards

Table 5.4. Cost of alternative road systems (£ million, 1986 prices)

network	capital cost of new and improved roads	traffic load	annual operating costs in 1991 (excluding maintenance and accident costs)
A	50.0	low restraint high restraint	43.5 87.2
B	106.6	unrestrained low restraint	60.0 52.6
C	130.0	unrestrained low restraint	66.2 56.6

Notes: capital cost includes, for network C, an estimate of £1.6 million for a new Tees crossing above, low restraint assumes parking controls in Middlesbrough central area; high restraint assumes further controls to achieve the transfer of an estimated 10 per cent of travel to public transport; unrestrained cost includes all costs of running the vehicle and (except time) annual operating costs for network A are understated as no allowance was made for slow lost through slower speeds due to congestion.

Table 5.5. Future annual use of alternative public transport systems

	100% per weekday		vehicle miles	vehicle-hours	occupancy (persons per vehicle)	average speed (m.p.h.)
	person-miles	person-hours				
system X:						
bus	1,057	68.6	41.3	3.6	24.4	17.8
rail	226	7.6	3.5	0.3	66.6	24.7
extra time	173	77.9	—	—	—	—
TOTAL	1,656	153.1	44.8	3.9	—	19.6
system Y:						
bus	1,454	84.0	65.1	2.9	32.4	17.2
rail	387	9.3	5.1	0.2	43.9	27.0
extra time	174	78.8	—	—	—	—
TOTAL	1,900	172.0	71.2	4.0	—	21.0
system Z:						
bus	1,214	70.1	74.2	4.0	17.8	16.8
rail	632	16.7	7.8	0.2	62.9	23.7
extra time	236	34.2	—	—	—	—
TOTAL	2,162	150.9	82.0	4.2	—	17.8

Note: extra time is estimated time spent waiting to end from, and waiting for services;
 express bus services are included with normal bus services;
 total person miles includes an allowance for walking distances.

Y: this system combines the present methods with an improved system for rapid public transport. That is, passenger services on the existing railways are doubled in frequency from Selkirk through Middlesbrough to Eaglescliffe; from Great Ayton to Middlesbrough; and from Middlesbrough to Billingham via Stockton; and express bus services are provided on the realigned A19 between Middlesbrough central area and Wolsiton and Ingleby Darwick. The feeder bus services are provided to stations on the rapid public transport services.

Z: this system deliberately attempts to direct traffic to the rapid public transport services by eliminating all services that might compete with rapid services, leaving only bus services feeding the stations on the rapid system and those bus services unaffected not in competition with the rapid system.

5.66 Table 5.5 shows that the total person-miles of travel rises slightly in system Y compared with system X, but that the total person-hours fall because of an overall increase in speed. This is to be expected as the object was to attract people from short-distance bus routes to the faster rail services. Nevertheless, doubling the frequency of rail services has led to an increase in travel by rail of less than 50 per cent. Naturally, there is a much greater diversion of traffic to rail in system Z, and an increase in average speed of about 10 per cent but this is achieved at the expense of a considerable increase in both person-miles and person-hours.

5.67 The costs of the alternative systems are given in table 5.6. The reduction in person-hours of travel in system Y compared with system X reduces the effects

5.68 It was concluded that whereas rail services at their present level fulfil a valuable role on Teesside, the general dispersion of activity leads to a demand for a more flexible and dispersed type of public transport system such as a bus service. However, the volume of traffic attracted to the express bus services on the realigned A19 suggests that it might be viable when the development of Lonsdale and Wolsiton has been completed.

Comparison of alternative transport systems

5.69 These alternative transport systems were compared, by combining the following road and public transport networks:

AX: the existing and committed road system with the present public transport system, modified to serve new development;

BX: the proposed 1991 road system with the present public transport system, modified to serve new development;

CX: the proposed 1991 road system, modified to include the river Tees crossing near Middlesbrough Dock, with the present public transport system, modified to serve new development.

That is, the two alternative public transport systems involving the use of an improved rail service were distanced from further consideration.

The total capital and operating costs of these three transportation systems under the predicted 1991 travel conditions are given in table 5.7.

5.70 It has already been noted that the average speeds of travel on system AX under low motorist conditions are unrealistic because, in fact, many sections of the road network would be loaded beyond their capacity. Therefore, the traffic load was altered and the operating costs recalculated on the assumption that a general restriction on the use of private vehicles would be applied with the effect of transferring a further 10 per cent of total travel to public transport. The result would be to increase the total operating costs, mainly because of the increased time spent travelling on public transport. Under these conditions, total annual operating costs would be about £63 million.

5.71 The construction of system BX involves capital expenditure of about £78 million over the cost of the

Table 5.6. Annual operating cost of public transport, 1991 (£ million, 1988 prices)

system	cost of system		cost of persons' time	TOTAL
	rail	bus		
X	1.20	2.72	6.54	12.06
Y	3.80	2.85	6.18	12.83
Z	3.30	3.58	6.59	14.00

of, but does not offset the increase in the costs of operating the bus and rail systems. And there is a substantial increase in system operating costs and the cost of persons' time in system Z.

Table 5.7. Capital and operating costs of transportation systems: costs (£ million, 1988 prices)

system included	AX high	AX low	EX low	EX low
capital cost 1988-1991				
road system	30	30	199	130
car parking	5	10	10	10
total capital costs (including bus fleets and rolling stock)	35	40	119	140
annual operating costs 1991				
all person time	35.5	34.7	20.4	32.9
all operating costs (including maintenance)	44.4	47.1	46.5	45.4
total person time and operating costs	62.9	61.8	77.9	78.3
public transport costs				
person time	14.6	8.1	6.1	6.1
operating cost (including allowance for capital costs)	8.4	3.6	3.8	3.8
total	23.0	12.0	12.0	12.0
private transport costs				
person time	20.9	26.6	23.8	22.4
operating costs	23.4	37.1	36.8	26.9
maintenance and accident costs	6.6	6.1	5.3	6.0
total	62.9	69.8	65.9	65.3

Notes: low restraint means parking control in Middlesbrough central area;
 high restraint means an additional diversion of 10 per cent of all travel to public transport;
 results are identified as on figures 5.2 and 5.3;
 car parking costs are for Middlesbrough and Sileghen central areas.

committed road schemes. The result of the additional expenditure would be to reduce total operating costs to about £77 million per annum.

5.72 The third system EX would require an additional expenditure on roads and a new Tens bridge of about £21 million, but would result in only a small decrease in operating costs compared with that achieved in system BX.

5.73 The financial implications of any two transportation systems may be examined by calculating the savings in operating costs between the two, and the additional capital costs needed. It was assumed, first, that the annual rate of investment in the construction of the road system would be constant over the twenty-five year period. However, recent work has shown that the capital cost of the system shown in table 5.7 may be an overestimate. Therefore a range of estimates of the capital cost has been calculated, the maximum being that in table 5.7 and the minimum being 10 per cent lower. It is assumed in both cases that the real costs of road construction rise by 1 per cent per annum.

5.74 The second assumption is that annual operating costs for a particular system would also rise uniformly from their 1988 level of £47.9 million, to the predicted 1991 level and would then remain constant for a further ten years, enabling an estimate to be made of the total operating costs for a period of thirty-five years. This assumes that savings in operating costs would come uniformly as the faster rate of increase in car ownership in the earlier years would be offset by the greater increase in population in later years. The calculation is based on the forecast rise in personal income described in chapter 3, that is, the real value of a person's time is assumed to increase at the rate of 3 per cent per annum.

5.75 Two methods of comparison were actually used: a the net savings were calculated in the form of savings in operating costs achieved by additional investment in capital costs, in each type of cost, using alternative discount rates of 6 per cent and 8 per cent to establish the total additional capital cost over twenty-five years and the total savings in operating costs over thirty-five years. The results for this method are given in tables 5.8 and 5.9;

Table 5.8. Net return on transport discounted to 1988 at 6 per cent and 8 per cent: high capital cost (£ million, 1988 prices)

discounted capital and operating costs	system AX high restraint		system AX low restraint		system EX low restraint		system EX low restraint	
	6%	8%	6%	8%	6%	8%	6%	8%
capital cost 1988-1991	33.8	13.3	33.8	13.3	70.2	59.1	82.5	68.6
operating costs 1991-2001	5,115.8	643.5	1,086.3	637.8	1,042.4	333.8	1,032.9	709.0
compared with AX (high)								
additional capital costs	0	0	--	--	45.6	26.3	68.0	43.8
saving in operating costs	0	0	--	--	72.4	48.3	67.8	66.0
net savings	0	0	--	--	26.8	10.0	23.8	5.4
compared with AX (low)								
additional capital costs	--	--	0	0	45.6	26.3	68.0	43.8
saving in operating costs	--	--	0	0	64.8	38.0	64.8	44.4
net savings	--	--	0	0	7.9	-1.3	9.6	-4.0
compared with EX (low)								
additional capital costs	--	--	--	--	0	0	12.4	10.4
saving in operating costs	--	--	--	--	0	0	9.5	5.6
net savings	--	--	--	--	0	0	-2.9	-4.0

Note: 1. Operating costs allow for a 3 per cent per annum increase in the value of a person's time.

2. Real capital costs have been assumed to increase by 1 per cent per annum to allow only for the increase in labour costs.

Table 5.5. Net system on a constant discounted to 1981 at 8 per cent and 0 per cent: low capital cost (£ million, 1986 prices)

discounted capital and operating costs	system AX high restraint		system AX low restraint		system BX low restraint		system CX low restraint	
	£m	8%	£m	8%	£m	8%	£m	8%
capital costs 1986-1991	25.2	17.9	31.2	17.8	63.2	55.3	74.3	52.9
operating costs 1986-2001	1,118.8	849.0	1,068.9	837.6	1,042.4	793.0	1,602.9	792.0
compared with AX (Net)								
additional capital costs	0	0	—	—	43.0	35.3	53.1	44.8
savings in operating costs	0	0	—	—	79.4	61.2	82.8	66.0
net savings	0	0	—	—	36.4	25.9	29.7	21.2
compared with AX (low)								
additional capital costs	—	—	5	0	42.0	35.3	53.1	44.8
savings in operating costs	—	—	5	0	84.9	75.0	84.9	66.0
net savings	—	—	0	0	42.9	39.7	31.8	21.2
compared with AX (low)								
additional capital costs	—	—	—	—	0	0	11.1	5.3
savings in operating costs	—	—	—	—	0	0	9.5	6.0
net savings	—	—	—	—	0	0	-1.6	-0.3

Note: 1. Operating costs allow for a 3 per cent per annum increase in the value of a person's time.

2. Real capital costs have been assumed to increase by 1 per cent per annum to allow only for the increase in labour costs.

b the rate of return was calculated which would make the discounted savings in operating costs over the thirty-five year period equal to the discounted cost of additional investment in roads over a period of twenty-five years. The results are given in table 5.10.

5.76 The first method shows that a net saving is achieved by constructing system BX rather than system AX in all cases, except that of assuming system AX to be operated under low restraint, the original capital costs to apply and a discount rate of 8 per cent. But, in all cases, system BX gives a better return than system CX.

5.77 These results can also be illustrated by the method shown in table 5.10. This shows, for instance, that to construct system BX would give a rate of return of 7.6 per cent per annum compared with system AX even if both systems were operated with a low degree of restraint on the use of the private car and using the original cost of capital construction. But an extension of the network to give system CX would give a slightly lower rate of return (5.8 per cent) under the same conditions.

5.78 It must be borne in mind that the lowest return of 7.6 per cent per annum was based on a comparison with system AX under low restraint which, as has been stated, is not a realistic condition, since it involves impractically high volumes at certain points of the network. A more sophisticated analysis would, therefore, increase the operating costs quoted for system AX under low restraint. In these circumstances it is considered that transportation system BX, operated at a low degree of restraint, gives an adequate return on the capital investment. The total level of capital investment would be the equivalent of £168 per capita (for the 1991 population) at the highest, of which £110 would be that in excess of committed investment.

5.79 The construction of a new Tyne crossing, as shown in system CX, would give a net return on the

additional capital investment compared with system AX but a net loss on that compared with BX. Further, the total level of per capita expenditure would be substantially greater than for system BX and greater than the standard assumed for national long-range planning. However, the capital cost of this system is based on the assumption that the river crossing itself would cost £7.5 million. This is a preliminary estimate; further study might show the river crossing to be a feasible proposition, particularly in view of the possible continued growth in population beyond 1991 and with the current uncertainty about the likely intensity of development on Seal Sands. It is therefore important that a reservation of land be made for a possible future construction. This reservation is not a straightforward matter as it involves modification to the initial proposals for Manton motorway and the realignment of this section of the new A55-A1065; it is discussed in chapter 17.

Conclusions from the transportation evaluation

5.80 The fundamental conclusion from this analysis is that the predicted rise in car ownership requires, and the dispersed nature of activities on Teesside permits a transportation system capable of accommodating a high level of travel by private car. The main traffic flows by private transport are shown in figures 5.7 and 5.8. The major item of capital expenditure should be for the construction of a primary road system much of which will consist of urban motorways and expressways, that is, grade-separated roads on new alignments with full or partial control of access. The road studies in chapter 10 show that much of this system can be constructed in open areas such as Skirby Beck, for the realigned A19; or cleared housing areas for parts of the realigned A55-A1065.

5.81 A second conclusion is that strict parking controls should be applied in Middlesbrough central area. Provision should be made for 12,000 car-parking

Table 5.10. Rate of return for alternative transportation systems

original capital costs	Rate of return for system	
	BX	CX
1. low restraint on committed network	7.6%	6.0%
2. high restraint on committed network	10.1%	9.0%
capital costs reduced by 10%		
3. low restraint on committed network	8.0%	6.0%
4. high restraint on committed network	11.1%	10.0%



Figure 5.7
TRAFFIC FLOWS, 1991—PRIVATE

spaces. The use of these car parks should be controlled by the local authority in matters such as the amount of provision in different parts of the central area; the charges to be made; and the permitted periods for parking. These are essential if too much traffic by car is not to be attracted to the central area and, consequently, the capacity of the Northern Route and the approach roads to the central area to be exceeded.

5.02 This conclusion was confirmed by analysis of the likely peak hour flows, for each purpose separately, in the vicinity of the central area. The peak hour flows were derived from the 24-hour weekday flows. Peak hour flows were not independently predicted as the 24-hour weekday flows can be much more accurately forecast.

5.03 The third conclusion is that the public transport system should continue to be predominantly by bus services. The volume of traffic by public transport is shown in figures 5.9 and 5.10. The dispersed nature of travel both now and in the future makes impracticable a greater use of rail services. However, express bus services should be provided on the realigned A19 between Waverton and Middlesbrough, and Ingleby Grenwick and Middlesbrough following the development of these outer areas.

5.04 The average charge per passenger mile by public transport would have to be at least 2d. for buses and 5d. for rail. This suggests that although the bus service could be operated at a price equivalent to the basic

running cost of private transport (excluding depreciation and other fixed costs), the rail passenger service may be difficult to operate without subsidy. However, such a subsidy may well be justified in terms of total system costs.

Planning objectives for the future growth of Teesside

5.05 It is now possible to set out the specific planning objectives for guiding the future growth of Teesside. They are formulated within the context of the broad aims and basic assumptions about regional policy given in chapter 2; are based on a thorough appraisal of the problems and opportunities latent in the present situation of Teesside given in chapters 3 and 4; and on an exploration of alternative forms for land use and transport policy. As such, these objectives are of fundamental importance, defining the sort of place which Teesside should become. The arguments in favour of each objective have been described in earlier pages of this report. Here they are brought together as a synthesis.

5.05 The general aims of the plan are:

a. to satisfy the likely needs of Teesside arising from its growth in population, employment, affluence and travel; and providing remedies for the current weaknesses in the form and structure of Teesside;

b. to give as much freedom and variety of choice as is possible to people in their daily life;



Figure 5.8

**TRAFFIC FLOWS,
1991 - PRIVATE
Central Teesside**



c to clarify the distinction between different levels of planning so that planning decisions can be made correctly.

5.87 Two basic assumptions underlie the entire analysis and forecasts:

a a regional imbalance in standards of living and patterns of behaviour between Teesside and the rest of the country will become narrower, following long term trends and Government policy;

b regional policy will be for Government to foster economic development and to promote environmental conditions to a degree that will make possible a growth in the population of Teesside by the retention of its natural income and the attraction of inward migration.

5.88 The specific objectives for the urban structure of Teesside can be described under five headings:

- employment structure
- conservation of natural resources
- urban form
- transport system
- environmental quality and standards of living.

5.89 The need for the employment structure is that it should be diversified by the attraction of about 63,000 more jobs in light manufacturing industry, mainly for males; by the growth of office employment and development in higher education; and for a rising proportion of service employment. The objective is needed:

- a to give the working population a wider choice of employment;

- b to give a wider geographic dispersal of employment;

- c to give a greater opportunity for females to work, with the consequent possibility of higher family incomes;

- d to give an employment structure less liable to cyclical fluctuations in employment.

5.90 The conservation of natural resources is directed at the proper utilization of four resources—water, river, land and countryside. To this effect:

- a a longterm plan for the supply of water for industrial development, possibly by the efficient exploitation of the upper Tees valley, should be prepared;

- b the possibility of developing and using the capacity of the river for navigation should be retained. Specifically, this means that the use of land fronting the navigable parts of the river should not be pre-empted by activities not requiring this facility; and that there should be no restrictions on the clearance height for vessels downstream from the line of a possible, future river crossing near Middlesbrough Dock;

- c the remaining extensive areas of flat land suitable for industrial development should be planned, permitting efficient phased development, and their long term use not placed in jeopardy by inappropriate development. Specifically, these are:

- (i) Seal Sands, for port development and capital-intensive, low density industry such as chemicals or metals;
- (ii) Cowpen Marshes and the land east of Bellingham,

for capital-intensive, low density industry, but avoiding the further establishment of plant likely to give off pollutants on the north, west or south sides;

(ii) land at Ulfrey Nook for large scale industry that would not rely on river transport, but would rely on a greater volume of labour and would not create atmospheric pollution;

d. policy for the countryside include:

(i) the better quality agricultural land should not be used for urban development;

(ii) the increasing demands made upon the countryside and on the North York Moors National Park means that special provision should be made to canalise this demand into specially developed country parks in locations that are, in some cases, close to urban areas and, in others, are on the margins of the National Park, where they will be most accessible to the population of Teesside;

(iii) the main areas of interest for nature conservation should be made landscape resource zones where comprehensive planning would be directed towards the preservation of their ecology and wild life. Corbitt is likely at Seal Sands; in the last resort, its industrial development should receive priority over nature conservation.

5.21 The urban form of Teesside should have the following characteristics:

a future residential development should be located relatively close to the existing built-up area, rather than in a satellite or new town, or extended line of develop-

ment from the built-up area, or dispersed settlements in the countryside.

b. the build-up of employment in a single dominant centre should be avoided, and an even greater dispersal of employment encouraged by locating new industrial estates and district centres near the residential areas most remote from the main riverside belt of employment;

c. specifically, these two characteristics, together with those for the transport system and environmental quality, discussed below, mean that the main areas for future growth should be:

(i) southwestwards, at the Leven valley and Ingleby Barwick where the opportunities are greatest because of its desirability for light industrial development and much of its environmental quality for housing;

(ii) southwards, at Nunthorpe and Merton, where environmental quality and accessibility to the regional centre and the main employment zones is high, though there has to be a limit on the amount of residential development because of the capacity of the primary road system. This area should also see a growth in employment, to give a greater level of job opportunity.

(iii) eastwards on the coast, where a small additional amount of residential development should be provided, in the more accessible areas at Saltburn and Mankay; and where the growth of employment should be encouraged, mainly in East Cleveland, although it will prove difficult to attract industrialists to this area;

(iv) northwestwards, near Wolviston and Wynyand, where a certain amount of additional development

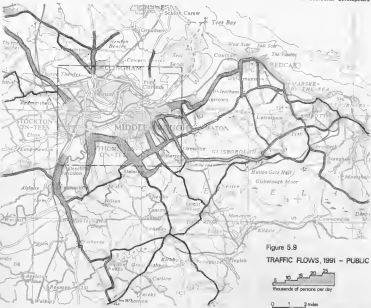


Figure 5.9
TRAFFIC FLOWS, 1991 - PUBLIC

0 10 20 30
Thousands of vehicles per day

0 1 2 miles

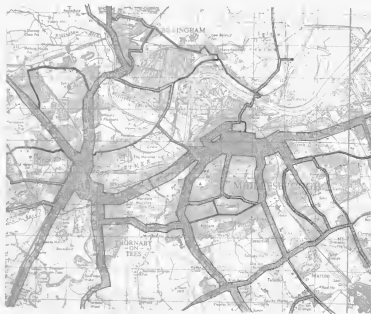


Figure 5.10
TRAFFIC FLOWS,
1991 PUBLIC
Central Teesside



should take place to improve the use made of the transport system in an area of potentially good environment where there is likely to be a high level of job opportunity.

If the tendency should be encouraged for activities to be dispersed and for overall densities to be kept relatively low within a generally compact form of development. This is achieved partly by an open space system that penetrates the built-up area and contains the primary road system, parks and playing fields, large institutions and, where feasible, agriculture and woodland. It is these characteristics that give the urban structure of Teesside its flexibility to accommodate a substantial increase in traffic whilst safeguarding environmental quality.

5.92 *The objective for the transport system must be the development of a road system capable of carrying a rapidly increasing proportion of the total traffic on Teesside. The distribution of activities and the rising levels of car ownership mean that nearly 80 per cent of travel will be made in private vehicles by 1991. This will necessitate:*

a the development of the road pattern so as to canalise as much traffic as possible onto a high capacity primary road system, leaving the existing roads to act as a secondary and local distributor system without much modification and without damage to the environment;

b the maintenance of a public transport system

capable of carrying its present volume of traffic by current modes of operation.

5.93 *The final objective relates to the quality of life that should be experienced on Teesside. The objectives that could be achieved by planning policy include the following:*

a the build-up of a housing stock that satisfies peoples' wishes and meets their diverse needs;

(i) a variety of house types, which probably means ensuring that future construction contains a wider range of size and type of dwelling than at present, particularly more small dwellings;

(ii) a variety of types of environment, including locations on the coast, in dispersed villages and small towns and in central locations as well as the more usual types of suburb;

(iii) a selection of good sites for new housing areas, namely, those with lighter soils, rolling topography, a wooded landscape and a good prospect, in preference to flat or treeless environments;

(iv) new housing areas designed to provide for a high level of car ownership; local traffic circulation carefully arranged in relation to pedestrian movement; wide range of densities, with flats and maisonettes as well as low-rise dwellings; good provision of incidental open spaces, children's play spaces and landscape treatment, in relation to the natural features of the site; and primary schools and small shopping centres of about a dozen shops that will be easily accessible on foot;

b the clearance of older residential areas where the state of decay is too far advanced, or their rehabilitation to provide improved environmental standards comparable to those in the new housing areas;

c the residential areas, old and new, should be located so that their inhabitants have easy access to the following:

(i) the regional centre in Middlesbrough which should become the centre for more specialized activities on Teesside, including a choice of department, variety and chain stores; specialist shops; wholesale distribution; professional, financial and commercial services; entertainment, culture and further education; and local administration;

(ii) a district or main shopping centre, within about 20 minutes travelling time, satisfying the more frequent needs of a population of the scale of 60,000, for shopping and offering local employment; though these centres should not be so large as to attract trade from the regional centre;

(iii) secondary and further education which, to provide the maximum flexibility for accommodating changes in education policy, should be in school

campus sites of about 70 acres, serving a population of about 30,000;

d the future growth of traffic makes it essential that a system of environmental areas should be created. The volume of traffic within these areas should be kept as low as possible by attracting through traffic to the primary road system; placing the principal traffic generators, including industrial estates, district hospitals, facility centres, and secondary school campus sites, adjacent to the main roads; and using traffic management techniques to exclude extraneous traffic;

e improving the visual attraction of the environment of Teesside will have a far-reaching influence in raising the quality of life. Certain improvements should come as a by-product of other objectives: urban renewal of town centres; rehabilitation of older housing areas; design of new housing areas; a system of open spaces and landscapes. Much would be achieved by the proposals to reduce river and atmospheric pollution. In the last resort, however, the outward appearance of the Teesside environment will depend on the wish of its citizens to set higher standards of design and cleanliness than in the past and on the quality of the professional advice available to them.



6 Urban structure policy

Summary

a Two themes have characterised the evolution of Teesside's urban structure in the past:

(i) the development and retention of the main centres of employment in a strip along both banks of the river Tees;

(ii) an accelerating dispersal of housing areas onto the higher ground on either side of the Tees, though with the main weight south of the river where the better environment is found.

b These two themes will continue to characterise the changing urban structure with modifications and a new theme will be brought in, namely the creation of an efficient and comprehensive primary road system.

c Detailed and specific policy recommendations are made covering all aspects of the urban structure, within the limitations of the planning objectives defined in chapter 5.

d Finally, the changing districts of Teesside are classified into:

(i) districts to undergo internal reorganisation by re-development of their older parts and central areas, and the development of their remaining open land; Middlesbrough, Stockton, Thornaby and Easington;

(ii) districts to be the scene of much new development including the Washburn and Seal Sands sections; south of Yarm and Thornaby; Northhope-Merton; and the coast from Redcar to Saltburn;

(iii) districts to remain stable in scale and function though sometimes with considerable amounts of dispersed development; the rural areas of Sillingdon, Sedgfield, Gaisborough and Stokesley;

(iv) East Cleveland, in which economic development and the growth of employment should be encouraged in an effort to stabilise its population.

The urban structure policy

6.1 Two main themes have characterised the physical growth of Teesside in the past. The first has been the continuous increase in economic activity along both banks of the river Tees, creating an industrial belt interspersed with a series of central areas, including Stockton, old Thornaby, Middlesbrough, North Ormesby, South Bank and Gillingham. In the more recent past, the centre of this economic activity has moved downstream to where new investment has taken place in heavy industry and port developments. This shift has been intensified by the abandonment of older industrial areas such as at Bewesfield, Stockton and Ironmeston, Middlesbrough.

6.2 The second theme has been the increasing physical separation of housing and industrial areas. In the beginning, iron works were built alongside the river as

at Ironmeston, and houses were built alongside the works as at St. Hilda's. Increasing prosperity, greater mobility and the demand for more space and better living conditions have resulted in more recent houses being built on higher ground further away from the riverside industrial belt with its sea mists, atmospheric pollution and noise. This is seen in the virtually new town of Sillingham, deliberately sited northwest of the steel industrial areas in the direction of the least frequent winds, and in the southern suburbs at Northhope and Merton.

6.3 These two themes will continue to form the basis for urban structure policy in the future though with some modifications and one addition (see figure 6.1). Broadly speaking employment will continue to be located in the riverside belt. The narrow belt of Teesside from Eaglescliffe, Bewesfield and Thornaby in the west to Seal Sands and River Sands in the east will contain 70 per cent of the total employment on Teesside in the future, a proportion only slightly smaller than at the present time. But the trend for a shift downstream of the centre of employment will change. Whilst economic activity will be spread throughout the zone and the main weight of capital investment will continue to shift downstream, a new centre of employment will rise in the triangle defined by Stockton, Eaglescliffe and Thornaby; and employment in North Middlesbrough will grow with the increasing function of Middlesbrough as the regional centre for Teesside.

6.4 Most of this change will take place provided that adequate communications are available and that the regional aims of policy are accepted by Government. Land for light industries has already been made available at Eaglescliffe and Thornaby; the rationalisation and reorganisation of heavy industry, the development of Seal Sands and port developments are all reasonably certain to take place; and, provided that the growth of population is not impeded by outward migration or a failure of inward migration, the rising employment in services at central Middlesbrough and central Stockton is certain.

6.5 But there has to be an attempt to bring new employment to areas on the coast and in East Cleveland that are likely to be short of jobs and that are distant from the main centres of employment. Second, it is necessary to anticipate the future directions of growth in light manufacturing industry that will best meet the planning objectives for Teesside, namely, in the southeast, closely related to the main entrance to Teesside by road from the south, the A13. Third, the Northhope area close to the A172 provides a location for new employment that is likely both to satisfy employees' requirements and serves to increase the number of jobs available for the areas suffering from a shortage of employment. But

none of these locations for new jobs will offer employment on the scale of the main centres in the riverside belt.

6.6 Housing will continue increasingly to be removed from the main employment areas. The older housing areas will be cleared, rehabilitated and redeveloped in part, the net effect being a fall in population. The new housing will be on the higher ground in areas of potentially attractive environment mainly south of the river Tees but sufficiently dispersed to avoid the worst forms of traffic congestion.

6.7 But the continued evolution of these two themes will further lessens the volume of travel-to-work. The net number of people travelling daily into urban Teesside, which means effectively the riverside employment belt, will rise threefold from 22,000 nowdays to about 65,000 by 1991. The threefold increase in car ownership during this period means that there is likely to be an even greater than threefold increase in the volume of traffic on roads into the employment area.

6.8 The new theme in future urban structure policy must therefore be the creation of an efficient primary road system that has three main strands. The first is the construction of an adequate east-west route through the industrial belt. This would be a realigned route for A55-A1265 from Darlington to Redcar along the south bank of the Tees east of Thornaby. The second is the construction of a series of short north-south routes providing access from the housing areas to the east-west route. The third is the linking of the residential areas, and the north-south routes by a second east-west route, the so-called South Teesside Parkway.

6.9 A large proportion of the investment in the urban structure will be directed at making the main east-west belt of employment into an efficient system of land use and communications. There will be the construction of the east-west route and the river crossings for it and the A19. There will be the redevelopment of the centres of Middlesbrough and Stockton. Housing in the area will be rehabilitated but there should be too a southward retreat of housing so that the east-west route with its landscaped setting make the northward limit of housing on the south bank of the Tees, for instance at Thornaby or Grangeclough. Finally, there will be the continuing investment in industry and port developments.

6.10 The other main area of action will be the four principal new residential areas at Nunthorpe-Merton; Levenside; Wolvaton; and the newer parts of Cleveland at Gulsborough, Saltburn, Maresca and Redgar. The most complex and urgent of these is that at Nunthorpe-Merton because of the amount of commitment already made and the lack of an effective planning context for this growth. The situation is less urgent at Wolvaton and west Cleveland because the degree of commitment is relatively smaller in the case of Cleveland, and the development is less immediate in Wolvaton. Special landscape and topographic problems at Levenside and a need for local authority development give some urgency to its planning.

The planning proposals

6.11 A number of specific proposals have to be made for the implementation of the urban structure policy and the attainment of the planning objectives for Teesside. These are set out in this chapter but it must be stressed that their precise form derives not only from the analysis given in the earlier chapters in this report but

also from the local planning studies to be described in subsequent chapters.

Housing

6.12 The distribution of dwellings on Teesside expected by 1991 is shown in table 6.1 and the population

Table 6.1. Numbers of dwellings, 1986 and 1991 ('000's)

district	1986	net change	1991
1. Middlesbrough	46	- 9	37
2. Stockton	36	3	39
3. Thornaby	7	1	8
4. Billingham	11	11	22
5. Easington	13	-	13
6. Redcar	11	3	14
7. Nunthorpe-Merton	8	28	36
8. Easington-Farm	4	27	31
9. Billingham	1	-	1
10. Seaford	2	1	3
11. Saltburn and Maresca	5	8	13
12. East Cleveland	7	2	9
13. Gulsborough	4	3	7
14. Stockton	4	2	6
1-8 Urban Teesside	154	10	164
9-14 Rural Teesside	32	48	80
TOTAL (rounded)	166	58	224

distribution in table 6.3. The first cause of change in the stock of dwellings is the effect of the programme for the rehabilitation and redevelopment of the existing housing stock, whereby 28,000 dwellings would have to be cleared but less than 5,000 could be redeveloped on their existing sites. The programme was described in paragraph 3.26; its geographic distribution in paragraph 3.61; and its phasing in paragraph 3.43.

6.13 The second cause of change is the commitment by planning permissions and other means of land sufficient for the development of 51,000 dwellings. This commitment was described in paragraph 3.58.

6.14 The third cause of change will be the recommendation of land sufficient for the additional 48,000 dwellings likely to be required by 1991 (see figure 6.2 and table 6.2).

Table 6.2. Recommended location for additional dwellings, 1991 ('000's)

district	dwellings
4. Wolvaton	3.8
7. South Middlesbrough	15.2
8. Levenside	23.0
11. Maresca	1.8
dispersed rural settlement:	
to district 4, Wolvaton	0.7
to district 8, Levenside	1.4
to district 14, Stockton	1.3
TOTAL (rounded)	46.5

The reasoning behind the selection of each of these areas is as follows:

a Wolvaton; land on the north bank is needed to meet the likely increase in the already large surplus of employment over population north of the river. The area lies west of Wolvaton village, north and east of the proposed country park at Wyrray Forest and Billingham Beck. It will thus meet the general environmental requirements for new residential areas;

b Nunthorpe-Merton; land has already been committed in this area for 13,000 dwellings but this has created three problems. First, additional roads will be needed within the area itself and to link it efficiently

with North Middlesbrough. One reason for the linkage is to ensure that there will not be a serious increase in the amount of traffic passing through the residential suburbs of south Middlesbrough. Second, additional investment will be needed for utilities, shopping and education. Third, the pieces of farmland left by this pattern of development are not likely to be efficient or economic farming units. In view of the merits and attractions of the area for residential development these three problems are best met by allowing for as even greater growth in population, of the order of 40,000, in addition to the committed development, making fuller use of the new roads needed by the committed development, especially the proposed Merton Motorway; planning for an orderly process of development; but retaining the ridge near Newburn Hall and Hemlington Grange as a firm southern boundary for development during this period and keeping its skyline clear of buildings. This is illustrated in chapter 13.

c *Levenside*: this is the main area recommended for further growth. It includes land at Ingilby Bank north of the river Leven and at Castle Levington and Kirklington south of the river Leven. Different aspects of its development are illustrated in chapters 14, 15 and 16. The area was selected first, because of its proximity to the main areas of future committed and likely growth in employment at Eaglescliffe, Bowesfield and Thornaby; second, because it is close to the assigned route for the A19; and third, because of the potentiality of the lower Leven valley as part of the open space system for urban Teesside. Nonetheless, careful landscape treatment will be required for Ingilby Bank if it is to become a good, urban environment.

d *Marske*: a relatively small amount of additional population has been allowed for at Marske to meet the probable demand for houses in a coastal location and to take advantage of the rail services between Saltburn, Middlesbrough and Darlington and the committed road improvements. Any further growth, however, would make necessary a greater improvement to the road system than has been committed;

e *dispersed rural settlement*: an allowance has been made for this type of development over and above that already committed at Hutton Rudby, Stokesley, Great Ayton and other, smaller places. The demand for this type of settlement is likely to grow with increasing car ownership and an increasing ratio of white collar workers with higher incomes. Evidence from the past shows that the demand has been quite small though it may have been prevented by rural planning policy. Some further growth could probably be accommodated in the larger settlements. The main problem will be to avoid destroying the environmental qualities that attract people to these localities in the first place. For this reason, there is a case for investigating seriously the creation of entirely new villages of between 600 and 1,000 dwellings reliant upon commuting to urban Teesside. Likely locations for such villages include the Wynyard area and preferably the plateau within the meanders of the river Tees overlooking the river. A village in such a location on the south bank of the Tees would have a highly attractive environment without hampering the visual scene of the river valley itself, and would be well placed for commuting to Teesside or Darlington. Other locations beneath the Cleveland escarp or in Cleveland would not be as satisfactory. In the former case, they would be in conflict with the recreation and conservation policies for the National Park and in the latter they would be too distant for easy commuting.

3.15 The average annual house building rates to implement this programme, both for replacement and population growth, should rise rapidly to about 4,100 dwellings by 1971, and then rise more slowly. The full programme is described in paragraph 3.43. Its implication for the local authority sector, which should be responsible for an average of 2,300 dwellings a year, is described in paragraph 3.46. Finally, the housing standards of size of dwelling, density of development and environmental quality are set out in paragraph 3.49.

Table 6.3. Distribution of population, 1966 and 1981 (1981's)

Area	1966	net change	1981
1. Middlesbrough	106	-35	120
2. Stockton	83	3	86
3. Thornaby	34	3	37
4. Billingham	28	36	72
5. Easington	45	-2	43
6. Redcar	34	10	44
7. Northumbria-Merton	58	32	190
8. Eaglescliffe-Bowesfield	51	31	130
9. Darlington	3	-	3
10. Seacroft	9	2	11
11. Saltburn and Marske	14	17	21
12. East Cleveland	22	4	26
13. Gillingham	12	9	21
14. Stokesley	12	0	21
5-8 Urban Teesside	376	52	348
7-14 Rural Teesside	103	213	316
TOTAL (committed)	479	228	704

Central areas

3.16 The outlines of a policy for shopping were defined in paragraphs 3.112 to 3.123, but policy for central areas includes other activities as well, including offices, certain types of service employment, administration and higher education.

3.17 The main proposals for central Middlesbrough all derive from the basic policy that it should become the regional centre for Teesside. To this end, a local plan is set out in chapter 8, with the following provisions:

a gross shopping floorspace should increase from 1.2 to 2.6 million square feet by 1991;

b office floorspace should increase from 0.8 to about 2.0 million square feet by 1991, including 0.3 million square feet for central Government offices; and about 0.4 million square feet for the local administrative centre for Teesside;

c about 150 acres of land in close proximity to the central area should be reserved for the growth in peripheral activities including warehousing and wholesale distribution, motor trade, and other related service industries; this growth was described in paragraph 3.162;

d the Teesside Polytechnic should be located near the central area.

3.18 The other proposals for central areas are:

a Stockton to remain a major shopping centre serving western Teesside, its gross shopping floorspace increasing from 0.8 to 1.1 million square feet by 1991 and with growth in employment in central activities from 7,000 to 12,000. A local plan is given in chapter 10;

b the commitments and proposals for central Redcar and Billingham and Thornaby town centres are for their shopping floorspace to be expanded to 0.4, 0.2 and 0.3 million square feet respectively. Any further growth of these centres, and any major office development, should be resisted. A local plan for Redcar is given in chapter 11;

c district centres are needed to serve a local population of the order of about 50,000 with shopping, local

offices and recreation. The following sites have been selected:

(i) centres to serve new residential areas with about 75-100,000 square feet of shopping floorspace:

district 4: Wainston (not necessarily at the existing village);

district 7: Coulby Manor; Merton Grange;

district 8: Ingelby Barwick; Kildaveington Grange; locations for the centres in districts 7 and 8 are shown in the local plans for South Middlesbrough and Levenside in chapters 13 and 14;

(ii) existing centres to be expanded to serve future growth in population, each having 50-100,000 square feet of shopping floorspace:

district 7: Ormesby; Eaton (could possibly be larger);

district 8: Yarm (subject to control of the appearance of the High Street);

district 11: Marmke;

(iii) existing district centres to continue their present role and scale of activity though with redevelopment if necessary:

district 1: Unthorpe;

district 11: Seaburn;

district 12: Loftus;

district 13: Gilesgate;

d local shopping centres of not more than 20,000 square feet should be located in the new residential areas serving a population of about 7,000.

6.18 An evaluation has been made of this recommended provision of shopping floorspace using a mathematical retail sales distribution model. It shows that the regional, major and district shopping centres should each be able to attract sufficient trade for their development to be commercially viable. The evaluation treats each shopping centre as a whole within the full Teesside system of shopping centres. It is therefore no more than an approximate indication of the likely viability of different shopping centres. A more precise evaluation would have to be made on a much shorter time scale before any individual scheme were judged to be viable. This short term evaluation would be concerned with matters such as rent and construction costs as well as forecasts of the likely turnover.

6.20 Three particular points from the broad evaluation need to be stressed:

a total annual retail sales in central Middlesbrough would increase probably from £22 million in 1985 to about £64 million in 1991 but its proportion of the total retail trade of Teesside would rise only by 2 per cent to 26 per cent in 1991. The emergence of Middlesbrough as the regional centre would be marked more by the probable specialist nature of its trade than by its dominance over the total volume of trade;

b total annual retail sales in central Stockton would rise from £14 million in 1985 to £27 million in 1991. This would represent a fall of 3 per cent in its share of the total trade of Teesside, to 1991. This trade would probably be sufficient to give an economic return on the investment needed to provide a floorspace of 1.1 million square feet. But further analysis showed that an additional provision of, say, 150,000 square feet would lead to a less than proportionate increase in retail sales in the central area. This is because of the strength of the competition from Thoresby and Billingham, located in what was originally part of Stockton's hinterland. For this reason the proposed scheme for the redevelopment of the eastern side of the High Street should be phased over a fairly lengthy period;

c the new and expanded district centres are likely

to be commercially very successful but any pressure for larger district centres should be resisted unless and until the successful redevelopment of central Middlesbrough has been accomplished.

Health and education

6.21 The main reasons for the recommendations for health and education were given in paragraphs 3.124 to 3.135. The main proposals additional to the committed schemes are:

a a site for the proposed Teesside University is recommended at Ormesby Bank. It is nearly 800 acres in size, larger than is needed but sufficient to give a variety of site conditions suitable for the university with the remainder as public open space or remaining in agricultural use. Government policy may cause this to be a long term development in which case the site would either remain in its current uses in the interim or could become open space;

b a site for the proposed Teesside Polytechnic is recommended between the central area and Albert Park in an area of poor quality housing. The exact size of the site would depend on the phasing of the development plan for the Polytechnic. Land for playing fields could, in the short run, be found between Newport Road and Union Street in an area of housing that is to be cleared. Further details are given in chapter 8;

c a site will probably be needed for another college of further education. This should be in the Levenside area, near Kildaveington;

d four more sites will be needed for secondary school campuses, to service the new residential areas. They should be at Wainston, Kildaveington, Ingelby Barwick and Coulby near Hemlington.

Urban open spaces

6.22 The urban open space system should as far as possible take the form of a continuous system of linked open spaces, defined in relation to the main urban land uses and to topography. It should include the secondary school bases; higher education; public playing fields, which should be in units of about 25 acres; golf courses; town parks; and the landscape of the primary road system, which should be of a substantial nature. This urban system should be linked with the nearer country parks at Billingham Beck and the Leven valley. The distinction between the urban and rural open spaces will be one of scale and function rather than exact geographic location. Further details of the development of the open space system are given in the local plans for different parts of Teesside.

The countryside

6.23 The countryside around Teesside has to meet four conflicting types of demand: from the agricultural community; from the urban population of Teesside using the countryside as an amenity; from a wider urban population coming to the North York Moors National Park and the coast; and to meet the continuing physical development of Teesside.

6.24 The recommended policy to meet this situation is:

a at the most general level is the need to preserve the visual amenity of the National Park, the northern extension of this area to Eaton Moor and the valley of the river Tees between Yarm and Darlington;

b four areas should be made country parks with an

organised capacity to accommodate large numbers of visitors. These should be:

- (i) Billingham Beck and Wynant Forest which, in time, will be adjacent to urban development;
- (ii) the lower Laven valley which also will be in an urban area in due course;
- (iii) Great Ayles Moor forest park;
- (iv) Eaton Moor.

The reasons for this choice of locations were given in paragraph 3.144 and the possible development of the first three parks is illustrated in chapter 16;

c parts of the Tees Estuary should be defined as a landscape resource zone in which the interests of nature conservation would be an important factor in its planning. The definition applies to the North and South Gars, to Gresham Creek and parts of Cowpen Marsh and Seal Sands. In each of these, but particularly the last, it may prove necessary for industrial development to take precedence over nature conservation. This should be permitted only if the need for these sites for industry is convincingly demonstrated and provided that care is taken to minimise the adverse effects on wild life and ecology, particularly from the materials used for tipping;

d policies are needed for the coastal areas within Teesside.

(f) That between Redcar and Saltburn is low lying and subject to pressure for urban development. The general scale of such development that could be accepted was noted in paragraph 6.14, its form should be such as to keep open the coast between Redcar and Middlesbrough and Saltburn either for agriculture or as part of the open space system.

(g) The coastline east of Saltburn is in the form of high cliffs and lies within the National Park. It should be made more accessible by footpath but its detailed planning is in the hands of the National Park authorities.

(h) Redcar and, to a smaller extent, Saltburn provide organised recreation and entertainment, the demand for which is likely to increase. This should be catered for but further study is required to show what type of development would be best suited and whether it would be commercially viable and technically sound. The local plan for Redcar in chapter 15 shows that a large proposed likely to generate much traffic should not be sited near the High Street. The coast west of Redcar should be a landscape resource area not used for mass entertainment on a large scale. Therefore the most likely location for such development must lie between Redcar and Saltburn.

a the next recommendation is in respect of many of the villages and small towns of the countryside around Teesside, which are very attractive. The most striking examples are located in figure 6.3. A certain amount of additional growth could be permitted in the larger settlements but sympathetic design and control of the new development would be vital to ensure that it would be in harmony with the old.

f finally, the impending change of use should be recognised in areas where urban development is recommended by, for instance, ensuring that the hedge-row trees and small woodlands are not allowed to deteriorate or be felled or by tree planting in advance of development. This would give a sound basis for the creation of an attractive urban environment. This policy is illustrated in chapter 15 by a scheme for Ingley Barwick.

Employment

6.26 The distribution of employment on Teesside is likely to have changed by 1991 as shown in table 6.4,

Table 6.4. Total employment on Teesside, 1966-92 ('000's)

district	1966	Net change	1991
1. Middlesbrough	53	12	65
2. Stockton	32	12	44
3. Thornaby	8	18	26
4. Billingham	20	14(8)	34
5. Roke	45	2	47
6. Redcar	6	7	13
7. Northropes-Morton	3	19(12)	21
8. Ryedale-Rye-Tyne	4	27(18)	31
9. Saltburn	1	-	1
10. Seaboard	4	-	4
11. Saltburn and Middlesbrough	3	4(2)	7
12. East Cleveland	9	2(4)	11
13. Gumborough	3	1	4
14. Skewton	2	1	3
1-8 Urban Teesside	179	65(6)	244
7-14 Rural Teesside	28	64(37)	92
TOTAL (rounded)	197	119(48)	317

Note: Figure in brackets show the increase in employment attributable to the selection of locations for activities referred to in table 4.2

including the effects of the recommended urban structure policy. Rather more than half of the net change in employment is to be explained in terms of the likely changes to the employment of existing firms; the utilisation of land already committed for industrial development; and the entire increase in service employment resulting from the increase in population and family incomes except for that serving the new residential areas recommended for districts 4, 7 and 8. The nature of the commitment was described fully in paragraph 3.167.

6.26 The following recommendations are made for the provision of land for further industrial development, and the sites in question are shown in figure 6.1.

a Reserve land for heavy industry, that is land whose use for heavy industry should not be pre-empted by other activities;

(i) the most important recommendation is that for Seal Sands. The arguments in its favour, and the conditions on its use, were described in paragraph 3.149;

(ii) the land between ICI Billingham and Seal Sands should also be held in reserve for future heavy industry, though the likelihood of its development is less certain than that of Seal Sands;

(iii) the vicinity of Urley Nook provides a third reserve for heavy industry though, in this case, the likelihood is so vague that no actual area has been shown. The arguments for this was described in paragraph 3.161 and the absolute condition is that any large scale industry in this location must not lead to an increase in atmospheric pollution.

b The sites of future industrial estates should be reserved as follows:

(i) district 4: a site of 100 acres at Wilsonton to provide for a growth in employment in light industry. It is a location close to the A19 and the A580 roads that will give alternative types of employment to the predominantly heavy industry of this district;

(ii) district 7: sites of about 110 acres at Northropes and 125 acres at Hemington. The general need is to provide land for about 7,000 jobs in this district to give a greater choice of jobs in an area deficient in employment. Sites for estates are recommended at Hemington and Northropes. That at Northropes is particularly important as its location would be favourable for providing jobs to a wide hinterland possibly as far as Gillingham and Cleveland yet it would also meet the local needs of employers. But great care would have to be taken over the design of an estate in this location;

(iii) district 8; a site of about 190 acres at Gretna as a nucleus for further long term growth in this district as the Thornaby and Eaglescliffe estates become fully developed;

(iv) districts 11 and 12; new estates must be provided in Cleveland to give more employment in areas likely to become seriously short of jobs. A site of about 75 acres is recommended for Maresfield, the existing estate at Skelton should be extended by 80 acres; and a new estate of about 80 acres should be located in the vicinity of Loftus.

6.27 These recommendations are for specific inclusion within urban structure policy. Both the land for heavy industry and the industrial estates should be mainly centres of male employment. It is probable that there will be an additional demand by industrialists for small establishments employing mainly female labour similar, for instance, to the Montague Burton factory at Gileborough. These types of factory could be located in a more dispersed manner in close proximity to housing areas where they would be convenient for female labour. The details of siting and design would be a matter for local planning policy and do not form part of urban structure policy.

6.28 Finally, there is the land for service industry, wholesale distribution and storage. This ranges from the extensive areas needed for stocking coal or iron ore, and packing areas associated with heavy industry to the more intensively used sites for warehousing, road haulage, certain types of retailing or wholesaling (mail order, discount stores, builders' merchants, etc.) that are seeking a central location within Teesside.

a Industrial stocking and packing areas are found mainly within works' areas especially on the south bank of the river, near the industrial wharves. The only specific recommendations concern the heavy industrial land at Billingham. Tracts of storage land are shown on figure 6.3 along the frontage to the realigned A19: the riverbank at Haveron Hill, High Clarence and Port Clarence; and on the north of the area near Cowpen Bewley. These are intended to show that if possible manufacturing processes, especially those which might cause atmospheric pollution, should be kept away from the periphery of the heavy industrial area, especially from residential areas.

b The other types of warehousing and storage land are those seeking a central location within Teesside, for whose further growth land is recommended:

(i) west of the regional centre at Middlesbrough, on cleared housing sites: this is closely related to the proposals for North Middlesbrough in chapter 8;

(ii) the Ironmaster District, Middlesbrough: much of this land is vacant and the remainder is occupied by heavy industry; but any change of use in this area should be directed to service, warehousing and storage activities; a proposal for the reclamation and improvement of the site by means of controlled refuse disposal is given in chapter 9.

6.29 These recommendations for heavy industry and light industrial estates provide for about 27,000 new jobs. The balance of 23,000 additional jobs shown in table 6.4 would be the result of growth in service employment associated with the development of the new residential areas, including health and education and district centres.

6.30 The effect of all these changes will be to give a pattern of employment that is still dominated by the concentration of jobs in the Riverside belt but with a small measure of dispersal introduced by the new industrial estates. The net effect on job balances and

employment opportunity would probably be as shown in table 6.5. These changes should be compared with

Table 6.5. Net balance of employment opportunity, 1991 (1986 =)

district	male	female
1. Middlesbrough	0	+13
2. Stockton	+1	+6
3. Thornaby	+14	+3
4. Billingham	+13	-1
5. Tynes	+27	+1
6. Redcar	-8	0
7. Northwale-Morton	-15	-6
8. Eaglescliffe-Yarm	-3	-7
9. Skillington	0	0
10. Seabridge	0	0
11. Seaburn-Marske	-6	-2
12. East Cleveland	-2	-5
13. Gileborough	-4	-1
14. Skeltonby	-4	-2
1-8 Urban Teesside	+49	+19
7-14 Rural Teesside	-37	-19
TOTAL (rounded)	+12	0

Note: employment opportunity = total employment - resident working population (excluding unemployed). '+' indicates a surplus, and '-' indicates a shortage of jobs in a district, not by travel to work.

those shown for 1986 and the committed employment in table 4.3. The biggest changes in function occur in Stockton and Middlesbrough which become areas that are in balance for male jobs instead of relying, as in 1986, on jobs in neighbouring districts. Also Middlesbrough will become much the most important source of female employment, attracting workers from the rest of Teesside especially the new residential areas to the south. The comparatively small district of Thornaby will become a major centre of employment, especially for the residential areas at Northwale-Morton and Ingley-Berwick. But the coast, East Cleveland, Gileborough and Skeltonby will remain as areas that are short of local employment opportunities and will rely on urban Teesside, though it is hoped that the recommended sites in East Cleveland will do something to offset the shortage of jobs in this remote part of Teesside.

Road system

6.31 The recommended primary and secondary road system for Teesside in 1991 is shown in figure 6.2; and the anticipated volumes of traffic on its different sections are shown in figures 6.7 and 6.8. The main characteristics of the system are given below and detailed comments are made in chapter 17.

a The realigned A66-A1085 is an east-west route from Darlington to Redcar to provide improved access to Teesside from the west end, within Teesside, to central Middlesbrough and the south bank industrial areas. This involves, as new recommendations:

(i) the Thornaby by-pass: a new crossing of the river Tees at Thornaby and a new route between Elton, southwest of Stockton, and the intersection with the realigned A19; a planning study was made of alternative routes and this route minimises severance and damage to buildings in good condition;

(ii) the Northern Route: a new route east of the A19 by-passing central Middlesbrough; a study shows this route to be feasible and that which most effectively meets the needs of the area and it is in part committed; further details are given in the local plan for North Middlesbrough, chapter 8;

(iii) the South Bank motorway: a new route from central Middlesbrough to the intersection with the

extending A1085 near Leckonby steel works; a new road on this alignment will be needed because the existing A1085 will not be capable of carrying the predicted volume of traffic by 1991, and because the new alignment would give better access from the primary road system to the industrial areas of the south bank.

b *The realigned A19* most of this north-south route through Teesside is a committed proposal, the exception being the alignment between Wolsiton and Portwick roundabout. The existing road on this section will not have the capacity to carry the anticipated flows of traffic without serious damage to the environment of Billingham and a new route should be selected to the west.

c *The South Teesside Parkway* a second east-west route, from Eaglescliffe to Middlesbrough, is already committed in part through the road will have to be of a higher capacity than had previously been anticipated. But the committed road should be extended west beyond the realigned A19 to give improved access to Stockton, the Eaglescliffe employment area and the Airport making necessary a new bridge across the over Tees.

d *The Stockton Motorway* is a second north-south route from Ingleby Barwick and the Parkway extension across the river Tees, to the north of Stockton where it joins with the A177 (Durham Road) and the proposed north Stockton Bypass linking to the A18. This entire road is a new recommendation, to give improved access to central Stockton.

e *The Merton Motorway*, the third north-south route, is required from Middlesbrough to central Middlesbrough as a continuation of A172 to provide an alternative means of access from the south to Middlesbrough and offer the possibility of keeping traffic flows light on the secondary road system through Middlesbrough. This is a new recommendation for which there is a feasible line parallel to the Nunthorpe railway for a major part of the way.

6.32 The remainder of the road system would comprise existing roads; committed schemes for their improvement; and further local improvements warranted by the anticipated traffic. But two further parts of a longer term primary road system for Teesside must be mentioned:

a the question of a longer term crossing of the river Tees downstream from the Transporter Bridge has been considered. Three possible alignments for a bridge or tunnel were identified. Those at the mouth of the Tees or in the vicinity of Smith's Dock, near Cargo Fleet, were rejected on the grounds of expense and difficulties in the acquisition of land and construction. The third alignment near Middlesbrough Dock would be a continuation of the new Merton Motorway and would join the committed Seal Bender road. Reservation should be made for a new river crossing in this location if further study establishes it as a feasible proposition. The location is illustrated in figure 5.6, from which it will be noted that this problem will become urgent when final designs are being prepared for the intersection of the South Bank and Merton Motorways.

b there is too the question of a new route from Eaglescliffe to south of Yarm, forming a western bypass to Yarm and involving a new crossing of the Tees. This route might be justified in the period to 1991 if it were necessary to reduce the volume of traffic along Yarm High Street (see chapter 14); and it might prove necessary to accommodate any substantial growth of population in this sector of Teesside beyond 1991. For these reasons, the line of the road should be safeguarded.

6.33 This system would have two categories of road:

a urban motorways and expressways which would have grade separation and strictly controlled points of access;

b other roads shown in figures 5.4 and 5.5, although they would be all-purpose, should have as few points of access as is practicable and frontage development should be kept to the minimum. The greater part of the capital cost of this system would then be for the construction of the urban motorways and expressways (see table 6.2).

Table 6.2 Capital cost of road system (£ million, 1989 prices)

	committed	additional	total
a realigned A95-A1085	4.20	15.10	23.30
a realigned A19	0.92	15.93	26.85
c South Teesside Parkway	2.72	16.43	19.15
d Stockton Motorway and Express	-	11.83	11.83
e Merton Motorway	-	8.93	8.93
other roads	12.60	3.46	12.05
TOTAL	20.36	70.68	108.61

Car parking

6.34 Parking space should be provided for 12,000 cars in Middlesbrough central area. This would be 12 per cent less than would have to be provided for complete freedom of access by car to the central area. This restriction has been shown to be necessary if the road system in North Middlesbrough is to work. It will be for the local authority to implement this policy through its control over the location and capacity of parks; a possible system is shown in chapter 8. The authority should also control the permits and prices for car parking with the intention of discouraging commuters and other long term car parking.

6.35 There is unlikely to be need for strict car parking policies to restrain the use of cars elsewhere in Teesside. Two other areas where considerable provision will have to be made are in the central areas of Stockton and Redcar; details are given in chapters 10 and 11.

Public transport

6.36 The anticipated flows of traffic on the public transport system are given in figures 5.5 and 5.10. The system would be similar to the present, with bus services extended into the areas of new development. It is probable that express bus services would be viable on the realigned A19 between Middlesbrough central area and areas of new development at Wolsiton and Ingleby Barwick.

The changing structure of Teesside

The redevelopment districts

6.37 This group of districts includes Middlesbrough, Stockton, Thornaby and Easington, that is all the Riverside districts except Billingham. The changes in these districts are summarised in table 6.3.

Table 6.3 Redevelopment districts: 1, 2, 3, 4 ('000's)

	1986	net change	1991
population	307	-53	274
dwelling	32	- 8	66
employment	127	+44	182

6.38 The basic pattern is similar in each district: the older housing areas nearer the river will be cleared of

about 25,000 slum dwellings. These will be replaced by about 5,000 new dwellings on the cleared sites and 15,000 new dwellings on sites mainly in the south of Eton, Middlesbrough and Thornaby districts, and in the west and south of Stockton district. The effects of the reduction in the number of dwellings will be strengthened by the likely fall in average occupancy rates of persons per dwelling. So the population of the original core of urban Teesside will certainly fall in total and will be accompanied by a change in distribution so that the population remaining in the older low-lying areas of these districts will have fallen to a considerable extent. This can only be regarded as a desirable change as the environment of these older parts of Teesside is inherently poorer than that of the newer suburbs on higher ground.

6.39 But this loss of population will be offset by a growth in the employment of these districts. This growth will be concentrated in four locations: the central areas of Middlesbrough and Stockton, the Bowfield industrial area of Stockton and the Thornaby industrial estate and district centre. The too is a desirable change as it makes for a greater dispersal of jobs within the main riverside area of Teesside. The necessary and likely growth in employment in the two central areas will only be possible if the central areas are redeveloped and given the possibility of expansion into cleared housing areas: this is true particularly in the case of Middlesbrough.

6.40 The road communications in this group of districts will have been completely changed by the construction of the A66-A166 primary road through its heart, with good roads to Stockton central area and the developing residential districts. It will be very important that a road serving this function is given a well designed, landscaped setting. Principles influencing this design are described in chapter 15.

The development districts

6.41 This group includes Billingham on the north, and Eaglescliffe-Yarm, Nunthorpe-Marton, Redcar, Saltburn and Mareske on the south bank. Their changes are shown in table 6.6. In each district, the main change

Table 6.6. Development districts: 4, 6, 7, 8, 11 (1981's)

	1956	net change	1981
population	113	+338	351
employment	40	+71	111

is a substantial area of new development for housing and associated activities, including a certain amount of light industry. It will mean increases of 35,000 in the Billingham district, mainly west of Wolsleton; 27,000 on the coast at Redcar, Mareske and Saltburn; 50,000 in the Nunthorpe-Marton area; and 90,000 in the Eaglescliffe-Yarm district, mainly along the Leven valley. Each one of these developments is substantial and their construction could substantially improve the quality of living conditions on Teesside.

The stable districts

6.42 These include Sedgfield, Seftington, Stokesley and Guisborough, the remaining rural areas of Teesside by 1981. Although their population will grow by nearly 20,000, it will be mainly a dispersed form of settlement as additions to existing small towns and villages. Nevertheless the landscape and use of these areas will

change particularly with the greater impact of people seeking leisure in the countryside, their demand being directed mainly to the new country parks on the edge of the urban area at Wynyard and the Leven valley, and in the more truly rural parks at Great Ayton and Eton Moor.

East Cleveland

6.43 Finally, it is reasonable to describe East Cleveland as an area with problems and features that set it apart from the rest of Teesside though it is nonetheless a part of the Teesside economic system. The original basis of its economy was the working of ironstone and the creation of an iron and steel industry. With this impetus the population grew to about 22,000 living in three main settlements at Loftus, Skelton and Skillingrove. But the area's economic prospects started to decline many years ago and for forty years its population has remained static, implying a constant drift of migration from the area. The last iron mines closed in 1954, its present livelihood is gained partly in the iron and steel works at Skillingrove, and partly by travel-to-work to the rest of Teesside. Attempts to bring new jobs to the area have not been successful and employment on the Board of Trade Estate at Skelton has fallen in the last ten years.

6.44 The fundamental problem of East Cleveland is therefore that it has failed to find an alternative economic basis for it to continue to be a flourishing community. Several reasons have contributed to this failure. The supply of labour has been too small to attract incoming employers. East Cleveland is relatively distant from Teesside and the intervening roads are poor and difficult. The result is low family incomes, loss of population by migration, relatively low activity rates and relatively high unemployment rates; and the population of the area has been too small to sustain an acceptable level of social services, commercial and cultural activities.

6.45 This situation could possibly worsen in the future. No direct information is available from the industry itself, but in a twenty-five year period it is at least possible that the Skillingrove works will close, thus adding the equivalent of 2,500 men to the people who would by 1981 be seeking work in East Cleveland. Notwithstanding this, land has been committed for an additional 3,000 dwellings, sufficient for a population increase to about 30,000 though this might be partly offset by the effects of overspill if the older housing areas are rehabilitated, in which case the population might rise only to 25,000.

6.46 In these circumstances, three possible policies could be followed:

a policy of inaction, in which case population would probably continue to fall, at an accelerating rate, should the Skillingrove works close; the rate of decline might be arrested if Teesside commuters came in increasing numbers to live, probably in the Skelton area, the most accessible part;

b a policy of stabilisation in which the population of the area given by present commitments is accepted; road communications within and to the area are improved to the extent that is economically justified by that level of population (this means improvements to existing roads, the construction of bypasses to Mareske and Guisborough and possibly in the longer term the construction of bypasses to Skelton, Brotton and if practicable to Loftus); a serious attempt is made to attract new male employment firms to the area by the

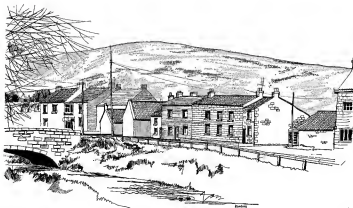
provision of a new industrial estate at Leazes and an extension to the Skelton estate. In this way, additional jobs would have to be provided for about 2,500 males by 1931 (or 5,000 if Skinningrove works were to close) if there was to be no increase in daily travel-to-work; this policy would be aided by the joint proposal to develop potash deposits, expected to give 500 jobs for the period of exploitation;

c a policy of growth is deliberately adopted whereby land is provided for an increased population and for the necessary amount of employment to sustain that population. An additional 15,000 people has been suggested, sufficient to create a community of about 25,000 people at, say, Skelton with a possibility of a further 15,000 elsewhere giving a total population of about 40,000 by 1931. This would then, it is argued, be sufficiently large a population to justify not only the provision of a higher standard of social services but also greatly improved road communications.

6.47 It is considered that the reasonable and flexible policy for East Cleveland should be that of stabilisation. The weaknesses of the expansionist policy are three. Even with a population of 40,000 and the considerable amount of employment there would still not be an economic justification for carrying out more than

improvements to the existing road system unless a deliberate decision were made to curtail investment in roads in other parts of Teesside for the sake of East Cleveland, or unless a decision were made by Government to regard East Cleveland as a separate problem area deserving of special investment in the roads without affecting the level of investment in the rest of Teesside. Secondly, even if the roads were improved, it is highly unlikely that a total of about 5,000 new jobs for men could be brought to East Cleveland in the light of its past record. Thirdly, there is no evidence that a migration of this scale could be induced into East Cleveland given the availability of alternative housing areas in other parts of Teesside unless jobs were locally available.

6.48 The recommended policy for East Cleveland therefore is that local improvements be carried out to roads in the area and that attempts be made to attract new manufacturing firms into the area at a rate that would provide for 5,000 additional jobs for men by 1931. If this policy proves successful there would then be a case for reviewing the policy of stabilisation. But until it has been proved successful it would be unwise to make substantial additions to the amount of land already committed for new housing.



7 Urban structure planning in the future

Summary

a The capital cost of developing the urban structure between 1985 and 1991 is about £1,000 million (at 1985 prices) shared equally between public and private sectors; this represents a faster annual rate than in the past if the investment in heavy industry is not included but no greater than the growth in population would justify.

b A ten year forecast identifies the main targets for planning as an average annual increase of about 2,000 jobs in light industry, substantially greater than recent average rates; a housebuilding programme of about 4,000 houses a year, somewhat faster than recent rates and likely to make necessary the development of Ingelby Barrick for local authority housing after 1972; redevelopment of central Middlesbrough and the construction of parts of the recommended primary road system, namely the realigned A19 and A66 and part of the South Teesside Parkway.

c The main urgent task for local planning is the preparation of district plans for Northrop-Manton, Ingelby Barrick, North Middlesbrough, central Stockton, the route of the realigned A66, the coast near Seaburn and Merska, and East Cleveland.

d The review of urban structure policy should be a continuing task with annual reports on:

(i) monitoring the progress of the changing urban structure to establish whether it is on the course set out in the recommended urban structure policy;

(ii) reviewing the planning objectives and examining deviations from urban structure policy to determine whether policy should be enforced, amended or revised; the review should apply as well to questions raised by possible long term planning, particularly by retaining the possibility of constructing certain key parts of a long term primary road system, including a new Tees crossing near Middlesbrough Dock and a western bypass to Teesside.

e Joint co-operation between the three local planning authorities (Teesside County Borough Council, Durham County Council, North Riding County Council) is essential for continuing an effective planning of the urban structure of the Teesside sub-region as a whole.

Implementation of the urban structure policy

Capital cost of development

7.1 The process of implementing an urban structure policy is by investment in the physical structure of Teesside by private interests and by local and central government. It is possible, very roughly, to estimate the cost of this investment including the cost of land acquisition. The results for the period to 1991 are

shown in table 7.1 which, however, must be treated with great caution. Forecasts of construction and land

Table 7.1. Capital cost of development (£ million, 1985 prices)

	private sector	public sector	total
industry and employment			
steel intensive	300	—	300
other intensive	28	3	31
storage and services	22	—	22
housing, including gross residential use			
new development	168	70	238
overhaul and redevelopment	—	88	88
rehabilitation	—	42	42
central offices, commerce and retail	35	6	41
civic and institutional uses			
education	—	42	42
medicine	—	47	47
culture	—	8	8
open spaces and recreation	—	34	34
utilities and services			
sewerage system	—	28	28
other	—	11	11
transport system			
road construction	—	100	100
docks	—	20	20
other	—	2	2
TOTAL (estimated)	543	552	1,095

acquisition costs of development over a twenty-five year period can only give a most general indication of the scale of investment.

7.2 The first point to be made about table 7.1 is that it actually represents a lower average rate of annual investment than has been taking place on Teesside during the last few years. This is due to the fact that the rate of investment in capital intensive industry has been proceeding at the scale of £30 million per annum since 1954 to a peak of £58 million in 1985 because of the construction of ICI Wilton, Lakerby steel works, two oil refineries and the continuous renewal of ICI Billingham. The future rate of investment of this kind is impossible to predict; the figure of £300 million is an arbitrary figure based on the reclamation and development of Seal Sands and is compatible with the capital investment in ICI Wilton, an area of land of similar size. But the actual figures could vary very considerably.

7.3 In other words the biggest single item in the future capital investment in Teesside is unpredictable. If it is removed, current rates of investment in Teesside are about £15-20 million per annum, made up largely of a continuous, substantial investment in housing and related activities; a much smaller, continuous investment in roads; and specific items including, at the present time, a district general hospital; the Billingham Forum; two district shopping centres; Tees Dock; and piecemeal redevelopment of shopping centres.

7.4 On this basis, the total investment of £743 million (including capital intensive industry) would need a higher rate than is currently found on Teesside. The higher figure is a consequence of population growth: of the recommended housing policy for redevelopment and rehabilitation; and of the construction of a primary road system. Each of these has been shown to be necessary and beneficial and in fact the increase in the rate of investment is no greater than the proportionate increase in the total population of Teesside.

7.5 However, the precise calculation of future capital investment is much less important than the demonstration that a substantial amount of future development will depend upon investment in the private sector. This stresses the need to see the urban structure policy document itself as an incentive and guide for future investment in the private as well as the public sector. The urban structure policy specifies public investment in roads, industrial estates, housing, open space; indicates land use planning policy; and gives forecasts of future personal income and expenditure, car ownership, shopping floorspace, travel, employment and population. The policy should be a powerful force to influence the size, location and timing of private investment. It follows that full and wide publication of the plan is a major step in the process of implementation provided that the structure policy is kept under continual review.

Ten year structure policy

7.6 Certain changes should be encouraged to take place in the urban structure of Teesside in the ten years 1980-76, a period for which more precise forecasts can be made since many of the land use and transport planning decisions have already been taken.

7.7 The forecast population of Teesside in 1976 is 558,000, an increase of 79,000 from the present time of which 57,000 is by natural increase and 22,000 as a result of migration. But this migration will only occur if there is a commensurate growth in the number of jobs on Teesside. Employment on Teesside is likely to increase by about 15,000 in the ten-year period as a consequence of the forecast changes in the employment of existing manufacturing establishments and in service employment following the predicted rises in income and population. The details are shown in table 7.2 but the

Table 7.2. Change in employment, 1980-76 ('000's)

	males	females	total
existing heavy industry	- 5.8	0	- 5.8
existing light industry	+ 0.9	+ 1.4	+ 2.3
primary employment	- 0.9	0	- 0.9
service employment, with migration	+15.0	+15.0	+30.0
TOTAL, with migration	+ 4.2	+11.4	+15.6
service employment, without migration	+ 3.1	+ 7.8	+10.9
TOTAL, without migration	+ 1.8	+ 8.2	+10.0

level of service employment depends on whether or not migration follows the assumed course.

7.8 The future supply of labour on Teesside depends partly on the future level of migration, partly on activity rates. It is expected that the female activity rate will continue to rise during the next ten years, but the effects are also shown if the rate remains at its present level (see table 7.3). No allowance has been made for a change in the net daily travel-to-work to Teesside but this too could vary over the ten year period.

Table 7.3. Change in labour supply, 1980-76 ('000's)

	males	females	total
population growth with migration:			
rising female activity rate	+18.5	+18.4	+36.9
constant female activity rate	+18.5	+ 8.7	+27.2
population growth without migration:			
rising female activity rate	+19.2	+14.2	+33.4
constant female activity rate	+19.2	+ 8.7	+27.9

7.9 The deficit caused by the increase in the number of people seeking jobs being greater than the likely number of available jobs should be met by attracting new jobs in light manufacturing industry to Teesside or by the industrial development of Seal Sands. The four situations are shown in table 7.4. The increase in

Table 7.4. Required increase in employment in light manufacturing industry, 1980-76 ('000's)

	males	females	total
population growth with migration:			
rising female activity rate	12.8	8.0	20.8
constant female activity rate	12.8	-2.7	10.1
population growth without migration:			
rising female activity rate	8.4	8.0	16.4
constant female activity rate	8.4	-2.8	5.6

male employment is of crucial importance if the population of Teesside is to grow by natural increase and by migration. An average rate of nearly 1,400 new jobs per annum is substantially more than has been achieved in recent years if it is to be found in light manufacturing industry on industrial estates. The land would be available for these jobs on the committed industrial estates and on the proposed estates at Skelton, Leazes and Marske if these are well out and provided with services. But this amount of land will be sufficient only if not more than about 10 per cent of the jobs on these estates are for females. If female ratios are much higher than this, then additional estates will be needed for male employment. The recommended estates, however, have been located and the transport policy designed on the basis of the employment of male workers.

7.10 The increase in female employment is a much more variable factor. An increase is necessary only if female activity rates are to rise. To that extent employment should be encouraged to rise by 5,000 additional jobs whether or not migration is attracted to the area. But the location for this type of employment is more flexible and its dispersal in relatively small units or close to residential areas should be encouraged. Not more than about 2,000 of these jobs should be based on the committed or proposed industrial estates.

7.11 The necessary rate of construction of new dwellings too will vary according to the level of inward

Table 7.5. Numbers of new dwellings, 1980-76 ('000's)

	local authority	private	total
population growth, with migration:			
replacement	18.8	2.0	20.8
household formation, etc.	7.8	18.7	26.5
TOTAL	26.6	20.7	47.3
population growth, without migration:			
replacement	18.8	2.0	20.8
household formation, etc.	8.6	12.0	20.6
TOTAL (rounded)	27.4	14.0	41.4

migration; the total quantities are given in table 7.6. Areas of priority 1 for redevelopment and rehabilitation should be mainly cleared and either redeveloped or changed in their use; the areas of priority 2 would then be treated in 1971-76. As a consequence, the average building rates should follow those in table 7.6.

Table 7.6. Average numbers of dwellings per annum, 1966-76

	1966-71	1971-76
new dwellings		
local authority	2,800	2,100
private	1,640	3,100
classroom	2,100	1,400
rehabilitation (equivalent dwellings units)	70	260

Note: assuming inward migration.

7.12 Land is available for about 25,000 dwellings in the private sector in a variety of locations (see figure 3.6) but only for about 15,000 local authority dwellings, apart from land for which the developer is not yet known. The local authority land would be barely sufficient for the ten-year period even at current rates of construction. Additional land will therefore be required after about 1972 at the recommended rates. This should be selected at Ingleby Barwick which has a capacity for 8,000 dwellings and arrangements made for its development during the 1970's, mainly though not exclusively for local authority houses. The consequence of these developments in housing is likely to be a fall in the population of Middlesbrough and Eton of about 28,000; and a rise in the population of Nunthorpe-Marton and Ingleby Barwick of about 30,000 each, with small increases in Saltburn and Middlesbrough and elsewhere.

7.13 The development of shopping in this period will be mainly in the central area of Middlesbrough where floor space for an additional 400,000 square feet should be provided of which about one-third is committed by the scheme for the comprehensive redevelopment of the Albert Road-Linthorpe Road area. The next area for comprehensive redevelopment should be the northwest sector. The net increment of floorspace in Stockton central area should not be more than about 50,000 square feet. This is less than half of that proposed in the scheme for the redevelopment of the eastern side of the High Street, which should be phased over a longer period than ten years as it is likely otherwise to be uneconomic. The existing district centres at Redcar, Billingham and Thornaby should continue to be developed, the expansion of the existing centres at Ormesby and Eton permitted and the development started of new centres at Marton Grange and Ingleby Barwick.

7.14 The other big development in the public sector during this period should be the construction of a major part of the primary road system, including the committed sections and the further proposals. This includes, at an approximate cost of £46 million:

- a the realignment of the A19 from Orsborne to Portrack roundabout, including the new river crossing;
- b the construction of the A66 extension from Hetton to the A1085 including the new road through Thornaby and the Northern Route and a new river crossing at Thornaby;
- c all or first stage of the South Teesside Parkway, from the realigned A19 to Lazenby;
- d minor improvements including by-passes to Gileborough and Manks.

Local planning

7.15 The proposals and forecasts covering the urban structure are not sufficiently detailed to provide a brief for design work or development control. For these purposes local plans are necessary and should be prepared for the main areas in which substantial changes are expected during the next ten years. These areas include the following:

a *Nunthorpe-Marton*: a district plan is urgently required so that non-residential land uses and a circulation system can be formulated for the main area of committed residential development. Roughly half the forecast net increase in the population of this area between 1966 and 1981 is likely to take place during the first ten years;

b *Levensall*: most of the additional residential development proposed in the urban structure plan is likely to take place in the late 1970's and 1980's but part of this area at Ingleby Barwick should be developed by the local authority at an earlier date. A district plan should be prepared for this area fairly soon to provide a context for the earlier development; to enable long term plans for utilities and services to be prepared; to give a steer on the creation of a country park in the Lazenby valley; to provide a context for the conservation of the architectural qualities of Yarm High Street; and to create a possible area of water recreation west of Yarm;

c *North Middlesbrough*: this area will be subject to almost complete urban renewal during the next twenty-five years, with work on the regional shopping centre of Teeside; the Polystyrene; an area for warehousing and service industry; the partial clearance, redevelopment and rehabilitation of the older housing; the early construction of a major part of the primary road system; and the redemption of the desolate Ironmaster District. Much of the work should be carried out in the first ten years. A district plan showing the general disposition of land uses and circulation and a series of action area plans for the immediate area of redevelopment are therefore urgently required;

d *Central Stockton* is similar on a smaller scale to North Middlesbrough. It includes major, though longer term road construction; redevelopment or rehabilitation of the housing areas; the redemption and intensified use by industry of the Sowerfield Lane area; and the redemption and improvement of the river frontage. The final degree of change will be as comprehensive as that in North Middlesbrough but the pressure is likely to be less intense and the urgency less extreme. Nevertheless, a district plan for the area should be prepared fairly quickly;

e *The realigned A66 road* between Hartburn and its intersection with Greystones Road at Grangeview, passes old housing areas and areas of potential industrial and storage development. But for much of its length it will become a major line of severance separating industrial from residential areas passing through a landscaped setting. Thus a district plan is needed to preserve the line of the road; to give a more detailed set of land use proposals for the purposes of development control on either side and for the rehabilitation or redevelopment of residential areas; and to give the basis for landscape treatment for the road;

f *Saltburn and Manks*: a district plan is needed relatively soon in view of the amount of the commitment already made for residential development to ensure that any development forms part of a comprehensive land use and circulation plan;

g *East Cleveland*: a local plan should be prepared as

soon as possible to decide the best use for the industrial estates suggested for Skebon and Loftus in relation to the committed residential development and the recommended road improvements. But the plan would also be important publicity in the attempt to attract new firms to the proposed industrial estates.

7.16 Feasibility studies for many of these district plans are described in subsequent chapters. Additional district plans will be required in the course of time, in particular for the two main areas where change is larger than or less certain. The first is the new residential area west of Walsaton with the associated country park at Wyngard Forest and Billingham Beck. This is likely to be a longer term development not starting until the late 1970's. The second is the industrial area at Seal Sands where the main problem is the lack of certainty on the exact nature and timing of any development.

7.17 A further stage will be needed between the level of generalisation in the district plans and the actual work of design and construction. These action area plans provide the briefs which set out in detail the planning context of a particular project for the guidance of developers and their architects and engineers.

The review of the urban structure policy

Monitoring the policy

7.18 It will be necessary for future development in the urban structure and economy of Teesside to be kept under observation to test whether the assumptions, analyses and forecasts underlying the recommended urban structure policy have continuing validity. These monitoring services will be of three kinds:

- a regular collection and analysis of key statistics of demographic, economic, housing, shopping and transportation factors;
- b refining and improving forecasting methods;
- c local planning experience.

7.19 The demographic indices for testing the validity of the urban structure policy are probably the most important as they underlie the population forecasts to be tested. Much of this type of data is available from current sources but the introduction of a quinquennial census of population will make the task easier. However, as each series of indices is liable to considerable short term fluctuations, the validity of the urban structure policy should not be questioned merely on the basis of one or two annual observations. The data are:

- a rates of natural increase, especially the age-specific fertility rates, both national and local;
- b migration;
- c changes in the age-sex structure of the population;
- d total population.

7.20 The most important economic indices can be derived from Ministry of Labour and Board of Trade data. They include:

- a rate of increase in employment in light manufacturing industry for males and females; (i.e. not only the anticipated employment according to the Industrial Development Certificates, but also the subsequent actual growth in employment; as past statistics should be collected for the expansion of existing firms and the attraction of firms new to the area);
- b rate of increase in employment by sex and industrial classification on the industrial estates;
- c rate of change in heavy manufacturing employment;
- d total employment, by sex and industrial classification.

- e activity rates, especially the female rates;
- f cross-section daily travel-to-work.

7.21 The main housing indices include:

- a household formation rates, from the census;
- b annual rates of new construction in the public and private sectors;
- c annual rates of clearance and rehabilitation;
- d source of origin of tenants for local authority houses;
- e location of new house-building and of fresh commitments for residential development.

7.22 Indices in the fields of personal income and expenditure and retailing may be more difficult to construct. The census of population may, in 1971, start to collect data about family incomes; the census of distribution could provide data about expenditure and the retail trade. The main indices are:

- a family income and expenditure;
- b location and quantity of new retail floor space;
- c rates of turnover per square foot in different types of trade and location;
- d total retail sales in shopping centres.

7.23 The main indices concerned with transportation are:

- a car ownership;
- b data for trip generation relationships;
- c data for trip distribution functions;
- d public transport usage;
- e traffic flows on key parts of the road system.

7.24 This data will have to be collected from a variety of sources including Government departments, overseas and local sources. It is important that future data are in a form that is compatible with the data collected by Teesside Survey & Plan. This applies to definitions, particularly the zoning systems. The zoning systems in this report were based on the 1961 Census of Population enumeration districts and are comparable with the local authority and Ministry of Labour boundaries of that time. Data from the 1966 Census of Population has been collected and reorganised into a comparable form. As far as possible, future surveys should use the same zoning system.

7.25 These are the most useful indices for testing the validity of the forecasts that underlie the urban structure policy. It will also be necessary to refine the forecasting procedures. This applies particularly to the local distributions of activity rates, occupancy rates, family incomes, car ownership, relative accessibility by public and private transport, job accessibility.

7.26 Finally, local plans and planning decisions may be used to test the validity and feasibility of parts of the urban structure policy. This does not mean that the urban structure policy should gradually become no more than a compendium of local plans and planning decisions, but that the preparation of local plans and the record of planning decisions should be used to establish the continuing relevance of the urban structure policy.

The review of policy

7.27 Review of policy is concerned mainly with deciding what should be done if the continuing surveys, the record of planning decisions and the revised forecasts show that the recommended urban structure policy is no longer being implemented; or what should be done if the planning objectives of structure policy prove to be no longer relevant or acceptable.

7.28 In the first case, the review would have to establish that structure policy is no longer being

implemented and identify the causes of the deviation from policy. It would then be a matter of deciding whether the new direction of policy is preferable to taking action to reverse the course of development towards the recommended policy. This is best illustrated by considering several examples which should show when the recommended policy was not being implemented;

a male employing manufacturing firms were not being attracted to Teesside at the recommended rate but other employment forecasts were proving correct; unchecked, this would lead probably to outward migration and a lower population forecast; lower house-building rates; a smaller regional centre;

b too high a proportion of female jobs on the industrial estates but all other forecasts proving correct: unchecked, this would mean that more industrial estates would be required in satisfactory locations, a situation that could not easily be rectified; it might also have effects on the public transport system making necessary a greater provision of public transport services to the original estates;

c a significantly greater rate of increase in male employment in manufacturing arising, for instance, from a decision by a large labour intensive firm to locate on Teesside; unless this acted as a substitute for male employment on industrial estates it would lead to a more rapid growth of population by migration and could lead to a situation whereby the Teesside economy would be more closely integrated with that of Darlington and Aycliffe;

d the rate of attraction of new employment to East Cleveland proceeds more rapidly than expected; or the growth of employment in the Eaglescliffe-Stockton-Thornaby area is much slower than expected; or the pressure for residential development and the actual rates of house-building are, say, higher than forecast at Gatesborough and the coast or, say, lower than forecast at Nunthorpe-Marton; any of these could change the balance of the urban structure making necessary a review of the public investment in utilities, roads, social services, and of land allocations;

e rehabilitation of the older residential areas proves unacceptable or has to be implemented at a slower rate; this would lead in the long run to a greater amount of overspill, as clearance would have to be extended into areas thought to be capable of rehabilitation. More land for housing would thus be required and the burden of house-building in the public sector would be increased.

7.29 This type of review when the development of the structure is not following the recommended course is a comparatively straightforward exercise. But the periodic review of planning objectives to question their continuing validity, is much more fundamental. For instance, a decision to change the objectives for regional policy and the attraction of inward migration; or the pursuit of a diversified employment structure; or the development of a compact urban structure; or a strong regional centre: in each of these, the decision to change the objective would be a vital political decision whose implications should be closely investigated before any action is taken. Once made, the new planning objective could make necessary substantial changes to the recommended planning proposals.

Long term planning

7.30 A third aspect of the work of review concerns the relationship between the recommended policy and the possible future directions for growth beyond 1991.

Serious and precise long term planning for the later period in the development of Teesside is not possible for two reasons.

a There are the technical problems of making long range forecasts. For instance a not unreasonable range of assumptions shows that the population of Teesside could lie anywhere between 0.75 and 1.0 million by 2011 without even taking into account the effects of migration. The forecasts of other factors such as income, expenditure, car ownership, travel and recreation habits, and employment structures, are also subject to variations that mean that any long term planning can be no more than a very general guide to possible future development.

b The planning objectives identified in chapter 5 firmly control the form of urban structure policy. These objectives are quite specific and relate to the analysis of the current situation of Teesside and its likely future needs. It is highly unlikely that these objectives would remain valid for a period so distant in the future and therefore it would be unwise to make precise recommendations for planning after 1991.

7.31 What is required, however, is that urban structure policy for the next twenty-five years should be flexible at least to the extent that it does not actively impede long term growth beyond 1991. In this context it is necessary to bear in mind the implications of future growth in these directions.

a Further development south of Nunthorpe was suggested in strategy E which showed a continuous development towards Stokesley; and in strategy G the new town at Stokesley. These two strategies would each provide for development in a good environment and in a favourable location for attracting light industry. Each strategy was rejected partly because of its implications for transportation. The problem was that the primary road system would not be capable of carrying the traffic if a free choice of modal split were allowed. The congestion would be mainly on the realigned A16. However, further analysis referred to in paragraph 5.69 showed that if a new Tees crossing were constructed near Middlesbrough Dock joining the proposed Marton Motorway and Seal Sands road, it might carry sufficient traffic to reduce significantly the volume of traffic on the A16.

b Further development south or west of Kirkcubington as in strategies A and B would be a less likely direction for future growth because of its greater distance from the regional centre of Middlesbrough and because of its effects on the volume of traffic on the realigned A16. However, if a changed set of planning objectives were to justify this policy, it could be provided for probably by extensions to the district centre recommended for Kirkcubington and by the construction of the western bypass to Yarm from the A16 at Grathorne to the South Teesside Parkway extension at Eaglescliffe.

c The third possible direction for long term growth would be northwest of Stockton as development between Wynyard and Sedgfield or in the vicinity of Blisphop. This direction would be even less likely than the southwesterly direction. If it were to occur it would probably be the consequence of more intensive industrial development in the vicinity of Seal Sands or near Urley Nook.

7.32 It follows from this that there are several key locations in which the opportunities for long term development must be preserved as part of the current urban structure policy. They are:

a a new crossing of the river Tees near Middlesbrough Dock, linking the connection between the

Marion Motorway and the realigned A66-A1085 With Seal Sande road;

b a new crossing of the river Tees west of Yarm and the line of a possible western bypass from Chesham to Eaglescliffe;

c the possible extension of the proposed district centre at Kirklington into a substantially bigger shopping centre;

d the land for industrial development at Urley Nook.

Action for review

7.33 Five types of action should therefore be taken to ensure that urban structure policy is kept under review:

a a monitoring service should be set up for collecting and analysing data about the course of urban structure development;

b a research programme should be initiated for improving methods of forecasting;

c arrangements should be made for making *ad hoc* statements of the consequences of proposed major developments to see whether their implementation would effect urban structure policy;

d a regular review should be made, probably every year, on the progress of urban structure policy; the validity of the planning objectives bringing up-to-date the recommended policies; and reviewing the priorities for work on the planning and implementation;

e finally, the report on the annual review should be published as part of the information system about the future of Teesside.

Political responsibility for the urban structure

7.34 Teesside has been shown to be an integrated social and economic system in which there are strong

interrelationships between its different geographic districts. Arising from this the recommended urban structure policy is a single set of proposals that are not capable of being implemented only in parts without having serious repercussions on the rest of the urban structure.

7.35 Nevertheless Teesside will for the time being be administered by three independent local planning authorities, namely, the new Teesside County Borough Council and the County Councils for Durham and the North Riding of Yorkshire. The division is given in table 7.7.

Table 7.7. Local planning authorities, Teesside Survey Area (1981's)

	population		employment	
	1960	1981	1966	1981
Teesside C.B.	363	456	175	345
parts of Durham A.C.	15	52	8	24
North Riding A.C.	67	135	16	47
TOTAL	475	703	197	376

7.36 Arrangements must be made for joint planning operations by the three authorities at the urban structure and sub-regional levels. This applies particularly to the future use of the data and mathematical models described in this report and the preparation of a statutory urban structure policy. Planning is a comprehensive process and this applies to all aspects of the subject. Above all, comprehensive planning by the three authorities is essential if there is to be a continuing and effective urban structure policy for the whole of Teesside.



8 North Middlesbrough district plan

Summary

a North Middlesbrough lies at the head of Teesside and has a population, in 1986, of 48,000 and an employment of 38,000. It can be divided into five areas: north of the main railway;

(i) Invernesses District, an area of dualist industrial land through some industry continues;

(ii) St. Hilda's, an area of mixed uses including some housing redevelopment;

(iii) Middlesbrough Dock and the nearby heavy industries;

south of the main railway;

(iv) the Middlesbrough central area;

(v) the adjacent housing areas, currently being cleared or needing to be rehabilitated;

b The area should undergo virtually complete urban renewal, to provide a location for the regional centre for Teesside and its associated activities; and to provide a fitting environment for the remaining population which should number about 22,000 by 1991.

c There are two key issues for the urban renewal. The first is that the main means of road access to the central area should be the Northern Route, a dual three-lane urban motorway joining the realigned A18 and the Mutton Motorway and forming part of the main new A66-A1665 road through Teesside. The construction of this road would have the following consequences:

(i) it would provide good access and enable traffic volumes on the secondary road system to be kept to manageable proportions, particularly those roads passing through housing areas to the south;

(ii) it would change the evolution of the central area, arresting the tendency for central area activities to extend southward along Lichhope Road;

(iii) it would make the Invernesses District and the Newport Road area of cleared housing more accessible by road.

d The second key issue is the future direction of growth for the central area. The current draft Town Centre Map makes proposals for a central area of about 100 acres, rectangular in shape and bounded on the south by Borough Road. Further growth beyond 1981, the forecast date of that plan, should provide for at least another 20 acres west of the town centre between Union Street and Newport Road. This would give the greatest flexibility in planning, cause the least interference with better housing areas, and lead to a satisfactory communications system.

e The principal uses associated with the central area would be:

(i) a civic and administrative area east of the centre;

(ii) the Teesside Polytechnic between the centre and Albert Park;

(iii) an area for services, industry, wholesale distribution and storage, west of the centre.

f The remainder of North Middlesbrough south of the railway would comprise redeveloped and rehabilitated housing such as is illustrated in the action area plan for Southfield in chapter 12.

g The area north of the railway should be planned as follows:

(i) Invernesses District should be reclaimed by landscape treatment associated with refuse disposal and used for service industry. A plan is described in chapter 9;

(ii) St. Hilda's should be redeveloped for mixed uses other than housing; a more detailed study is required;

(iii) the future of Middlesbrough Dock is uncertain and no action can be taken until its use and life is decided.

h The successful urban renewal of North Middlesbrough will depend on the creation of a sound landscape setting for the main elements, particularly the Northern Route; and a willingness to use techniques for temporary landscape treatment of areas that should ideally follow pending their permanent use. Methods for this are suggested in chapter 15.

The future of North Middlesbrough

8.1 The urban structure policy for Teesside made clear the paramount importance of Middlesbrough being developed as a regional centre, containing facilities for shopping and commerce and for cultural and recreational activities comparable in quality with those of Newcastle and Leeds, if Teesside is to have a sound physical and economic basis for balanced growth and redevelopment.

8.2 The interesting, and indeed exciting, aspect of this policy is the coincidence that Middlesbrough itself, at this particular point of time, is in urgent need of a metamorphosis. For apart from some of the central core (the shopping and office area) almost the whole of North Middlesbrough is ripe for redevelopment and a complete change of use.

8.3 It is of vital importance to Teesside that this exceptional opportunity for urban renewal in North Middlesbrough should be seized and exploited to the full. All too often new development and redevelopment takes place sporadically, thereby missing the chance of making precious capital investment to bring about major environmental improvements and to create something worthwhile to hand on to future generations. The reason for this failure is usually expediency: the ready availability of virgin land; the easier task of building in green fields compared with the more challenging problem of renewal. No town or city will

be reborn if these difficulties are evaded. Instead they should be enthusiastically accepted as enabling an advance to be made on two fronts to produce fine new buildings and at the same time eliminate decay.

8.4 Without doubt, the biggest single opportunity of revitalising urban Teesside lies in North Middlesbrough, where a concentration of effort could transform this decaying heart of the conurbation within a decade. The challenge of the depressing ugliness and air of abandonment of almost the entire area between Albert Park and the Tees provides precisely this opportunity for transformation; the chance which will not be repeated to give a sparkling twentieth century environmental image to replace the squalor inherited from the nineteenth century.

8.5 If the district plan for North Middlesbrough is accepted and properly programmed in terms of investment and physical construction a truly modern regional centre will speedily arise. It is designed as a single comprehensive plan which co-ordinates the various essential parts. And whilst there is adequate scope for expansion and change, as circumstances may change in future years, it is important that in the early years of development all the major activities described should be included; for the elimination of any of the basic users will prejudice the establishment of the regional centre.

8.6 North Middlesbrough therefore assumes particular significance in the planning proposals contained in this report; and of the various local plans selected to develop and amplify the urban structure policy it is the most important and far-reaching. This chapter deals with the area as it exists; with the development proposals already committed; with the opportunities for, and restraints upon, development; and with the kind and extent of development which should be encouraged and allowed for; finally it deals with the proposed comprehensive plan itself, showing how the almost complete urban renewal of North Middlesbrough can be accomplished.

Conditions up to the 1960's

8.7 Despite the present visual grime of much of North Middlesbrough, it should never be forgotten that this is a direct result of the town's intensive industrial activity which made a tremendous contribution to the national economy during the nineteenth century. In the northern towns of the Industrial Revolution decay and demolition are now widespread largely because of a complete change in the whole economic base of the major industries upon which the towns originally developed, and Middlesbrough is no exception. For this reason it is more than time that special priority in terms of investment should be given to rehabilitate

these towns, where present physical and economic conditions are propitious for their continuing growth.

8.8 Town planning is no new idea to Middlesbrough. Its origin, as an industrial town, was consciously planned on a site in the bend of the Tees where, based on local deposits of iron ore, the first home of the iron industry in Teesside was founded. Adjoining the iron-works the rows of workers' cottages were laid out in a grid-iron form around a central space containing the church and the market. The industrial area extends known as Ironmasters and the housing township is named St. Hilda's; now redeveloped with housing but retaining the rehabilitated centre buildings.

8.9 The township grew rapidly until, by the 1920's, North Middlesbrough was a densely developed area of iron and steel works, foundries, docks and wharves, the biggest shopping centre in Teesside, large areas of by-law and earlier housing, roads and railways. By then almost the entire physical structure was more than seventy years old and was rapidly becoming obsolete.

8.10 The iron and steel works and some of the wharves were the first to close as production became concentrated in the larger, modern works nearer the mouth of the river where they were accessible to the bigger ore carrying ships, and where land was available. Then a start was made on clearing the worst of the housing; some new flats and houses were built at St. Hilda's and the redevelopment of the shopping centre was commenced. Most of the remaining heavy industry and docks are likely to close during the next twenty-five years and most of the housing should be cleared or rehabilitated.

8.11 North Middlesbrough is bounded on the north and west by the River Tees; on the south by Albert Park and the first extensive areas of post-First World War housing; and on the east by Middlesbrough Dock and the Whitby branch railway line. It can be divided into five parts (see figure 8.1). In the north there is the Ironmasters District. East of Ironmasters is St. Hilda's comprising redeveloped housing, warehousing and light industrial uses, and older heavy industry. Further east is the area around Middlesbrough Dock, which in addition to the Dock has heavy industry and storage uses. The greater part of these three areas lies to the north of the railway running eastwards from Thornaby along the south bank of the Tees. South of the railway is the core of North Middlesbrough, the central area, the largest shopping centre on Teesside, including a well defined office district. The fifth and largest part is an expanse of old tenement housing surrounding the central area on three sides, extending from Newport through the Goshens area to Southfield on the east. Population and employment figures at 1966 are given in table 8.1.

Table 8.1. Population and employment, North Middlesbrough, 1966 ('000's)

	population	employment		
		manufacturing	services	total
1. Ironmasters	0	3.1	0	3.1
2. St. Hilda's	2.3	2.8	2.7	5.5
3. Middlesbrough Dock	1.2	2.8	1.8	4.6
4. Central area	11.1	1.2	14.2	15.4
5. Housing areas				
Newport	10.9	0.3	3.4	3.7
Cooperative Road	7.7	0	3.7	3.7
Goshens	9.3	0	1.1	1.1
Southfield	8.8	0.1	5.8	5.9
TOTAL (rounded)	47.5	10.2	27.8	28.0



Figure 8.1 NORTH MIDDLESBROUGH EXISTING



8.12 This district occupies some 400 acres in the bend of the Tees, lying between the river on the north and west and the railway on the east and south. Technological changes have led to the abandonment of the smaller plants built at Ironstone during the last century and to their replacement by much larger works on large sites downstream, about half of the site now lying derelict. It is described more fully in chapter 2.

St. Hilda's

8.13 St. Hilda's is a triangular piece of land, smaller than Ironstone, bounded on the south and west by the main railway and goods yards respectively and on the north by the river. This was the original residential nucleus of Middlesbrough in the nineteenth century, and it is now an area of varied uses. A considerable amount of redevelopment has taken place since the war, and there is little scope for further major changes.

8.14 The core of the area is the housing redevelopment around the old church and market place, and this is surrounded by smaller areas in different uses. To the south are the old but sound office buildings around Queens Square, an extension of the central area north of the railway; derelict residential and commercial property; and a new primary school. To the west, in the vicinity of Snowden Road, is a former housing area that has been redeveloped for warehouses and light industries. To the north are warehouses, warehousing and industrial uses, some of the properties being new. To the east is an area of offices, storage uses and heavy industry; some in obsolete buildings may close but the major ones are likely to remain.

Middlesbrough Dock

8.15 The area around Middlesbrough Dock contains a large engineering works, oil storage and a small amount of housing near North Onslow Road. The only use likely to become redundant or to change from its present activity is the Middlesbrough Dock. The report of the National Ports Council says that it could cease to be used once the programme for construction of the new Tees Dock is complete, although it might continue to be used by smaller vessels (see paragraph 3.96).

Central area

8.16 The central area is defined on the north by the railway; on the west by Boundary Road and Hardington Road; on the south by Borough Road, but with an extension down Linthorpe Road to Albert Park; and on the east roughly by Merton Road. The activities contained in it can be illustrated by its employment structure in 1965 (see table 8.2).

Table 8.2. Employment in Middlesbrough central area, 1965

Telephone Industrial Groups	
1-4. Manufacturing	1,280
5. Retail	5,430
6. Finance, Professions and Administration	4,800
7. Transport, Storage, Utilities	3,000
8. Health and Education	600
TOTAL (rounded)	15,430

It has the typical employment characteristics of a central area, with heavy dependence on retailing and commerce, for both of which it is the largest centre on

Teeside. Health and education activities are relatively specialised, with a strong element of further education.

8.17 The central shopping area contains 1,348,000 square feet of shopping floor space, including about 147,000 square feet along that section of Linthorpe Road to the south of Borough Road, comprising both local shopping and some central area shopping. This is the area defined in the Census of Distribution, 1961 and used by Gerald Eve & Co. Ltd. in their 1965 report on retailing to the Middlesbrough Corporation. It attracted annual sales of about £22 million in 1965, nearly twice as much as the next largest centre on Teeside, that of Stockton, with £12 million.

8.18 The core of the shopping centre is Linthorpe Road between the station and Borough Road, widened at the Newport Road-Corporation Road junction by some major central area shops, and by the Dundas Street precinct in the quadrant northwest of the junction. This junction is the heart of the centre, with the highest rents, the major department stores, and most of the large shops built during the last forty years. The remainder of the shopping area comprises, mainly, converted residential property providing basically small shops, unsuited to modern retailing methods, with few opportunities for rear servicing. Some rebuilding has taken place recently and it is obvious that the need for redevelopment will become more pressing in future as the properties near the end of their useful lives. The current pressure is illustrated by the interest of major property companies in the area and the proposal now in hand for the comprehensive redevelopment of the land in the southeast quadrant of the Linthorpe Road-Newport Road junction, C.D.A. No. 2.

8.19 Outside this core, central area shops mixed with shops of a more local character extend along Newport Road, Corporation Road and particularly along Linthorpe Road as far as Albert Park. Some redevelopment has taken place in Linthorpe Road, including the post-war Co-operative Department Store, a Bowling Alley and a number of new shops, some of which are still vacant. In addition, about 60,000 square feet of shopping floor space has been given planning approval but not yet built in the lower Linthorpe Road area.

8.20 A very important feature of the shopping area, particularly in the core, is the lack of development in depth. Thus central area shops are largely confined to Linthorpe Road, with no penetration into side streets except for the recent Dundas Street redevelopment that takes up the land in the centre of the block between Linthorpe Road, Corporation Road, Albert Road and Wilson Street. The proposed C.D.A. No. 2 provides for the redevelopment in depth of the block to the south of the Dundas Street block. The block areas between the main streets are mainly in residential use, but the age of the dwellings, lack of basic amenities, and the adverse effects of close proximity to the major commercial centre has resulted in many being in a derelict and deserted condition.

8.21 As a result of this form of development, shopping extends over a considerable distance, particularly the long strip down Linthorpe Road, and this impedes the creation of a prosperous shopping centre, in a situation such as at Middlesbrough where a large part of the premises are ripe for redevelopment this problem is intensified, since there is the danger that redevelopment could be spread over too wide an area, and frustrate the economic development of a compact shopping centre. This danger is aptly illustrated by the piecemeal redevelopment along Linthorpe Road south of Borough

Road and the later redevelopment of the Dundee Street precinct containing 80,000 square feet of shopping floor space. The result is that shops in Dundee Street have remained empty while the traffic problems in south Linthorpe Road have been intensified.

8.22 Office floor space, including banks, insurance, professional offices and Government offices, but excluding local government offices, amounts to about 624,000 square feet. The main concentration is in the vicinity of the railway station. It includes Government offices, the offices of Dorman, Long & Co. Limited, shipping and insurance companies, and spills over into St. Hilda's north of the railway. Some of the offices are in new premises, including Crown House, at the corner of Linthorpe Road and Wilson Street, and in the Dundee precinct. Others are in old, purpose built office buildings of solid construction but obsolete design.

8.23 A second group of offices lines Albert Road between the railway and Borough Road. Those to the north of Corporation Road mainly are banks and insurance offices. South of Corporation Road, the offices are housed in converted residential properties and mainly comprise the professions. This latter group has recently begun to occupy converted houses in Borough Road, near Constanine College. Redevelopment has started with the construction of a new office block for 64,000 square feet in Borough Road.

8.24 There is a well marked civic area around Victoria Square, comprising the Municipal Buildings, Central Library and Police Headquarters and there are proposals for new Law Courts on the south side of the Square, and for an extension of the library. Immediately to the south is the Constanine College of Technology with a newly built extension.

8.25 The most important use on the fringes of the central area is housing but there are groups of very mixed uses including warehouses, garages, miscellaneous services and the offices and printing works of the local newspapers. Probably the most important group south of the railway is in the Station Street-Boundary Road area. Station Street has a number of fruit and vegetable warehouses, while Boundary Road has food warehouses and motor garages, all housed in old and poor buildings.

8.26 To summarise, many of the buildings of the central area are obsolete. So far, the process of redevelopment has hardly begun, but a public inquiry held in September 1967 into proposals for the comprehensive redevelopment of the Linthorpe Road-Albert Road area indicates that a start may soon be made.

Housing areas

8.27 The rest of North Middlesbrough contains predominantly late nineteenth century housing surrounding the central area on three sides, pierced by strips of shopping along Newport Road (177,000 square feet of floor space) and Corporation Road (101,000 square feet of floor space) and on a purely local scale, Perimeter Road.

8.28 The northern part comprises most of the oldest housing in North Middlesbrough, built in the mid-nineteenth century. These are the smallest dwellings, most lacking in basic amenities and in the poorest condition. They are subject to some air pollution, in the case of Newport Road-Cannon Street from heavy industry across the river, and further east from adjacent heavy industry on the south bank. There is hardly any

public open space and they are affected by nuisance from traffic to the central area and to the south bank heavy industry, and by infiltration of fumes from the central area. Considerable parts of this belt of housing have already been cleared, for example at Cannon Street, and most of the remaining areas are in clearance plans for the period before 1981. This is therefore a very large strip of land in urgent need of redevelopment.

8.29 The southern part, which includes the Graham and Southfield areas, forms a better environment in almost every respect, the dwellings being of later date and generally rather larger. They are mostly in reasonable physical condition and a high proportion are owned by their occupants. They are less affected by air pollution, traffic nuisance and central area fringe uses. The area is also reasonably near to Albert Park, the only large public open space in North Middlesbrough. None of this housing is included in present slum clearance schemes. Action is needed to bring these dwellings up to modern standards if they are not to deteriorate to the state of the housing to the north.

Communications

8.30 The Darlington to Saltburn railway passes through North Middlesbrough from west to east, Middlesbrough Station being sited just north of the central area, in a very convenient position. There are goods yards west of St. Hilda's and south of the docks.

8.31 The main road framework consists of two east to west roads which provide major routes from Stockton and Thorneby to Eton; one, the A66-A175, following Stockton Road, Newport Road, Corporation Road, Smeaton Road and South Bank Road; and the other, the A1065, following Ayresome Street, Park Road North and Longlands Road. Two main north to south roads also serve the area; the A1130 Adklem Road on the west, crossing the Tees over Newport Bridge; and the A172, Marton Road.

8.32 The secondary roads are Borough Road-Harlington Road, serving as an east to west bypass of the central area relieving the A66-A175 route; Linthorpe Road, serving as an important north to south route to the central area; and Albert Road and A178 providing access to the second Tees crossing, the Thrapston Bridge.

8.33 These main and secondary roads are two-lane all-purpose roads, with limited stretches of three-lane width. They are subject to considerable congestion at peak hours, particularly in the central area, where locally generated traffic is made worse by the heavy flow of through traffic on the A66-A175 east-west route which cuts through the core of the shopping centre; and at the intersections between the major east to west and north to south roads, including the Newport Road roundabout and the intersection of Marton Road and A1065.

8.34 The central area has many of the traffic problems common to most shopping centres. The streets serve all purposes: i.e. pedestrians; private cars and buses; through traffic; deliveries and services to shops and offices; and, where possible, car parking. The congestion is particularly serious on Linthorpe Road which is of two-lane width north of Grange Road. Only the most modern shops along its length have rear access and servicing.

8.35 There are only about 600 off-street car parking spaces including temporary, cleared sites. These are in the underground car park at Dundee Street, in the

station forecourt, and the cleared site under Corporation control. Most cars are parked on-street, either in the shopping and business streets where it is strictly controlled; or in the adjacent residential streets where it is a serious nuisance contributing to the decline of these streets. Corporation surveys show that peak car parking demand has recently been increasing at a rate of 7 per cent per annum.

Current planning proposals

8.36 The current planning proposals for North Middlesbrough derive basically from the approved Town Map (1950) and its later amendments, and from the draft Town Centre Map prepared in 1966.

Road proposals

8.37 The most important road proposal is the realignment of the A19 trunk road, crossing the Tees west of the present Newport Bridge. Whilst it is not in the area under review it is referred to here because of its fundamental significance for the future of North Middlesbrough. Design work is in hand, the order deferring its alignment was published in 1957; and construction should start in 1968.

8.38 The most important current proposal to change the existing road system within North Middlesbrough relates to the main east to west route A66-A175. A new *Northern Route* is proposed from the Newport roundabout, following the line of the railway, north of the town centre to link to an improved Merton Road. A second bypass of the central area to the south is proposed in the form of a major road from the Northern Route following Boundary Road, Sneaton Street and Borough Road, all of which would be improved, and linked directly to Sneaton Street, the eastward continuation of the major east to west route, by a viaduct over the Whitby railway. This system of roads would create a ring around the central area.

8.39 A second east to west route, the *Cross Town Route*, is shown on the Town Map following the line of the present A1085. The consultants for the realignment of A19 recommend that the Cross Town Route should be included in the primary road system for Teesside but that it should connect to the realigned A19 some way south of Newport Bridge.

8.40 Based on these proposals the broad intention was to provide a dual three-lane section of the Northern Route from Newport roundabout to Albert Road with little grade separation. Approval has been given for a viaduct at Sneaton Street to improve east to west traffic flows, the scheme to be completed by 1970.

Central area

8.41 The Corporation have recently approved a draft plan for the redevelopment of the central area, in which it was proposed that all the major central area uses should be concentrated around the existing centre, roughly within the area bounded by Merton Road, Borough Road, Hartington Road, Boundary Road, and Station Street. Within this area would be a main service road system in the form of a loop, the existing shopping streets being redeveloped as pedestrian ways, with the shops served from the rear. Buses would operate on the periphery route and the main service loop, a bus station being sited north of Newport Road. Car parking would be located within the redeveloped areas and adjacent to the peripheral route. The plan provides for an additional 650,000 square feet of gross shopping

floor space with a reserve for further growth, some 7,000 car spaces and a retail market and bus station.

8.42 Provision is made for extensions of the office area in Albert Road; for a large reserve area east of the town centre for Government offices; and for extensions of the civic buildings around Victoria Square. South of Borough Road, land to the west of Conventry College is reserved for the development of a further education project. A large site at Station Street north of the proposed Northern Route is reserved for a wholesale market for fruit and vegetables; a retail market and a bus station being located immediately to the south.

8.43 The list of the central area proposals likely to be implemented is the scheme for C.D.A. No. 2, Linthorpe Road-Albert Road, in respect of which a public inquiry was held in September 1957. The project, which covers 18 acres, is described in the *Whitby Scheme and Whitby Analysis* prepared by the Corporation. It is based on the planning principles described in the draft Town Centre Map. The 210,000 square feet of shopping space provided represents an increase of 125,000 square feet beyond that now existing. In addition there is a small amount of office space and parking space for about 700 cars.

8.44 In order to help concentrate redevelopment in the central area the Corporation has, through development control, resisted attempts to extend the shops and offices in Linthorpe Road south of Borough Road and has agreed that certain outstanding permissions should be considered for revocation.

The demand for space in the central area

8.45 It is clear that the key element in the planning of North Middlesbrough is the development of the central area. It is important to determine in more detail the scale of development to be accommodated there to meet the requirements of the urban structure policy.

Shopping

8.46 To accommodate the shopping policy outlined in chapters 3 and 6, a very sizable expansion of the shopping area would be required (see table 8.3). A

Table 8.3: Middlesbrough central area: gross shopping floor space, ('000's sq. ft.)

	Convenience goods	Durable goods	Total
1986	320	1,014	1,334
1961	296	1,435	1,731
1951	300	2,100	2,400

large part of the increase in floor space could be met by redevelopment of existing premises to modern standards, and new shopping space could be located adjacent to the existing core, as proposed in the Corporation's draft Town Centre Map. The proposals should include a retail market, as proposed by Middlesbrough Corporation.

Offices

8.47 If the policy for office location is accepted, there would be three main sources of demand for additional floor space:

a) as a consequence of growth in population and incomes there would be demand for about 3,500 more jobs in central area services, banks, finance and the professions;

b. It has been tentatively assumed that there will be an increase of about 2,200 jobs in local government arising from the build up of Middlesbrough as the administrative centre of the new Teesside County Borough;

c. an allowance of 2,000 jobs has been made for the possible increase in civil service employment if a major Government office should be brought to Teesside.

8.48 In total therefore employment in offices could rise from about 5,800 in 1965 to about 13,500 by 1981, excluding employment in newspaper offices. It takes account of a drop in office employment arising from the commitment by Dorman, Long to have all of its office workers at Lackenby Works, on the assumption that the Northern & Tubes Group of the British Steel Corporation will continue this policy. This increase in employment would require an increase of office floor space from about 850,000 square feet in 1965 to 2,000,000 square feet by 1981 at a gross standard of 150 square feet per worker.

8.49 The locational needs of the three types of office differ. Much of the increase in floor space for central area offices could be provided above shops, or in the redevelopment of the existing office areas. The remainder should be located close to the existing shopping and business core.

8.50 The allocation of land for Government offices is in the nature of a speculative land reservation. The draft Town Centre Map allocates one such reservation east of the town and allowance should be made for another probably west of Crown House. The argument for locating Government offices in the central area is that their presence would help to build up the regional centre by creating a demand for commercial and cultural facilities, and that the construction of major new buildings would add to the visual quality of the centre. There would be many advantages to the office personnel in being located in the regional centre, arising from the policy that Middlesbrough central area should be well related to the primary road system for Teesside, and be the major focus of public transport routes.

8.51 With the creation of Teesside County Borough, the question arises as to where the offices of the new administration should be located, and whether new civic facilities are needed to serve the whole of Teesside. In the short term it is reasonable to assume that the various existing offices of the separate local authorities should continue to be used, but in the longer term a considerable measure of centralisation of the civic administration would be advantageous. This arrangement would assist in internal communications while the needs of the public could continue to be met by local offices. There is also a case for developing certain types of major new civic buildings to serve the whole of Teesside, for example a Library and Arts Centre. These activities should be located in Middlesbrough central area, adjacent to the present developing civic complex around Victoria Square, where the presence of poor housing property to the east and obsolete property in Council ownership to the south offers a good opportunity.

Teesside Polytechnic

8.52 In the Urban Structure Policy it was proposed that Teesside Polytechnic should be located in the central area. The proposal for a Polytechnic to serve the whole of Teesside and the adjacent areas was contained in the White Paper on Higher Education (Cmnd. 3036, 1966). The intention is that the present Constantine

College of Technology at Middlesbrough be promoted in status to a Polytechnic. The Polytechnic would have at least 2,000 full-time and 2,000 part-time students, compared with a present enrolment at Constantine of about 550 full-time and 2,280 part-time and evening students. It would require hostels for 750 students. The first stage of the new Polytechnic is likely to start within five years; the first hostel, for 100 students, being due to start in 1968.

8.53 The siting of the Polytechnic and its hostels in the central area would have several advantages:

a. the Polytechnic would provide the opportunity for redeveloping an area of poor quality housing with buildings and uses which would add scale and variety to the environment of the regional centre for Teesside. There are few, if any, alternative forms of investment which could achieve so much in this way in a comparatively short time;

b. the staff and students of the Polytechnic, and of the other educational facilities, would bring into the vicinity of the central area purchasing power and a demand for a variety of commercial, cultural and recreational activities. At the same time they would themselves benefit considerably from their proximity to these facilities;

c. regional road and rail access will be good and the public transport system will focus on the central area;

d. the investment in recently constructed buildings for Constantine College would be used to the full by integrating them within a comprehensive layout.

Landscapes and open space

8.54 The obsolescence of much of the housing in North Middlesbrough, and the large areas of dereliction, give an opportunity for the process of renewal to create an open space system which would add greatly to the quality of the environment. The system would have four roles:

a. in association with the major road and rail access routes to the central area it would give fine approaches to the regional centre;

b. it would add substantially to the amenities of the centre by forming a good setting for its buildings;

c. it would provide open space and playing fields for the renewed housing in North Middlesbrough, an area which at the present time has no major public open space except Albert Park, and would provide playing fields for the Polytechnic;

d. it would act as an attractive temporary use for certain sites which may be needed to be reserved for expansion of the central area.

Service industry, wholesale distribution and storage

8.55 Service industries likely to make the largest future land demands within the vicinity of the central area are warehousing and storage, motor trades, wholesale distribution and small service industries. These activities are significant in land use terms because of their large demands for space and, in some cases, their relatively low employment density. At the present time they show clearly marked location preferences, seeking sites which are near to the commercial centre of gravity of Teesside to minimise transport distances, and which have good road access. It is for these reasons that the Portrack and Cargo Fleet industrial estates have been taken up almost completely by these uses, to the exclusion of manufacturing industry.

8.66 As increase in employment of this character from about 8,000 in 1989 to about 12,000 by 1991 is forecast for Teesside as a whole, this represents a need for a further 250 acres of land since employment densities are at present only about fifteen persons per acre, and are likely to remain so. The greatest demand for this land is likely to be on the fringe of the proposed regional centre, if sufficient fairly cheap land is available adjacent to the major road system, close to the main centre of retail distribution and with good access to rail and postal communications. A relevant feature is the current need for the main post office at Middlesbrough to be re-built on a new site within the next few years. Thus a further 160 acres of land might be needed for these activities in North Middlesbrough, apart from the land still available at Portrack and Cargo Fleet.

Car parking

8.67 A fairly large amount of land will be required for car parking. It was shown in chapter 5 that full use of the private car by all people wishing to do so for trips to central Middlesbrough would not be possible. Nevertheless, land would be required for about 12,000 car parking spaces which would require perhaps 30 acres of land including surface and multi-storey car parks, and parking within the central area in the manner proposed for C.D.A. No. 2.

The size of the central area

8.68 The draft Town Centre Map prepared by the Middlesbrough Corporation was based on forecasts of the likely demand for space by 1991. It showed that an area of about 190 acres would be required for town centre activities, including an area of 13 acres of older housing to be kept as a reserve for future growth in the southwestern corner of the centre.

8.69 The analysis in this section shows the following crucial differences in the demand for space in the central area. They are the result of many factors. The key issues are that 1991 has been selected as the date for projection in this report; the analysis is based on an examination of the whole of Teesside; and it has been recommended that the central area be the commercial and administrative centre for Teesside:

- a the demand for shopping floor space in 1991 is taken to be 2,800,000 square feet compared with 1,800,000 by 1981 in the draft Town Centre Map; the main cause of the difference is the further ten years increase in population and expenditure;

- b the demand for office space in the 1991 forecast is 600,000 square feet greater than in the draft Town Centre Map; this mainly arises because of the recommendation for central government offices and a further ten years' growth in services;

- c the civic area is likely to be larger, if Middlesbrough is to be the administrative centre for local government on Teesside;

- d the anticipated demand for car parking is substantially greater at 12,000 spaces compared with 6,000 originally proposed. This figure is derived from the full transportation analysis of Teesside, whereas the earlier plan had no such information available.

8.69 As a consequence, the size of the central area by 1991 is likely to be greater than the 100 acres allocated for in the draft Town Centre Map even if the reserve land is fully used. It is impossible to be precise at this stage, but the additional acreage is not likely to be less than about 20 acres, with the possibility of a much larger extension.

8.61 The size of influence of the central area will also be considerable because of the land required for those additional uses which should be located close to, if not actually within, the central area. These are, the land for service industry, wholesale distribution and storage; the Teesside Polytechnic; and open spaces for the housing areas close to the central area.

Alternative patterns of development

8.62 It is necessary to examine alternative patterns of development in relation to the correct alignment of an east-west route and the future direction of growth of the central area.

The major east-west route

8.63 The Cross Town Route proposed by Middlesbrough Corporation would suffer the following serious weaknesses:

- a the proposal pays insufficient attention to the degree to which the proposed South Teesside Parkway could become a main route for traffic wishing to move from the south bank to the A15. Nevertheless, the flows along A1085 are likely to be such as to require a road of motorway standard in the long term; the best alignment for such a road would be parallel to, but north of, the existing A1085, crossing Norton Road near Cargo Fleet Road, where it would more easily connect with a Northern Route than the Cross Town Route;

- b the Cross Town Route would cut across the main radial roads giving access to the central area from south Middlesbrough, creating complicated intersections, and making movement between the residential areas and the central area difficult;

- c its effect would be to make the main line of access to the central area along Linthorpe Road. This would tend to increase the pressures for commercial redevelopment in south Linthorpe Road, and impede the redevelopment of the existing central area;

- d the road would do nothing to improve access to Ironworkers, the largest area with poor road access in North Middlesbrough;

- e it would involve the destruction of part of Albert Park, the only existing major open space in North Middlesbrough, and would sever the park from the housing areas to the north.

8.64 The alternative Northern Route, which could connect the realigned A19 and the realigned A1085 via Newport roundabout and Middlesbrough Station, would have the following advantages:

- a it would pass close to a series of important areas requiring direct access to the primary road system, namely the south bank industries and North Middlesbrough;

- b it would pass north of the central area, and make the main means of access to it from the north, thus helping to encourage southward commercial redevelopment of Linthorpe Road;

- c it would therefore help keep the focus of commercial activity near to Middlesbrough Station, thus offering some increased inducement to the use of the railway for work and shopping;

- d by taking the main volume of traffic north of the central area, traffic on the radial routes from the south would not be impeded by intersections, and the disruption of land uses caused thereby would be avoided;

- e the route would give good access to Ironworkers and St. Hilda's;

- f it would follow a well marked line of severance along the railway mainly through an area of cleared housing;

g the curved route would result in a greater length of road passing the central area, and allow for more and better interchanges to deal with the heavy traffic flows to the central area;

h expenditure for the construction of a road along the line of part of the Northern Route is already committed.

B.65 There is no doubt that the volume of traffic using the Cross Town Route as it now exists is such as will cause a very considerable traffic problem within ten years unless some relief is obtained. In view of the fundamental advantages of the Northern Route it is important to decide whether any improvement to the Cross Town Route is worthwhile, pending the construction of the former. It appears reasonable to expect that the Northern Route could be built as far as the A1085 by 1975 at a cost of around £4.7 million including land acquisition. While the improvement of the Cross Town Route would be relatively easy for most of its length, any satisfactory improvement near Marton Road would be costly and would divert attention from the Northern Route.

B.66 In view of its advantages the Northern Route should be the primary road and construction should be completed as soon as possible, as part of the effort to develop North Middlesbrough as a regional centre for Teesside. To speed this, major expenditure on the Cross Town Route should be avoided. Construction of the Northern Route would be by stages eastward from the realigned A18.

Central area growth

B.67 The direction of growth of the central area is influenced by the location of ancillary uses, particularly service industry, wholesale distribution and storage. The areas in North Middlesbrough which best meet their requirements are:

a the large area of obsolete housing and cleared land west of the central area, north of Union Street and south of the railway;

b Ironmasters, if road access was provided from the Northern Route.

B.68 Good access by road would be possible to both these sites but particularly the former once the Northern Route is completed. The main point of access from the motorway would be near Metz Bridge, that is away from the main points of access to the central area. And the first of these sites would be in close proximity to the central area shopping and business uses, the railway goods station and public transport services.

B.69 The growth of the main central area itself could also best be accommodated by a westward extension, parallel to the Northern Route. It would permit the distribution of uses in an integrated layout based on a system of secondary roads parallel to the Northern Route, and would have several advantages:

a a series of junctions would be possible from the Northern Route, offering equal accessibility to different parts of the extension and this would facilitate the provision of adequate access capacity to the area. As it would adjoin the first part of the Northern Route to be constructed the area would have maximum accessibility from the start;

b the system of secondary circulation would lie parallel to the Northern Route, along Newport Road, Union Street, Borough Road, that is existing roads which would not have to pass through residential areas;

c the extension would be into a 'soft' area, where change is inevitable, thus minimising the loss of better housing capable of rehabilitation;

d it would mean that the core of the central area remained near to the railway station, which would not be the case if the central area were extended southward;

e after C.D.A. No. 2 is complete, redevelopment is likely to be concentrated most on the northwest sector of the existing central area. Westward extensions would follow this pattern;

f it allows maximum flexibility in development. Redevelopment could proceed westwards with clearance of the obsolete housing, as demand dictates, and a very large area is available for expansion. If land becomes available in advance of need due to the rapid deterioration of the housing, it could be put to temporary use as open space or car parks;

g land is available, at Cannon Street, cleared and ready for immediate development, for example for the new site for the parcels sorting office for the Post Office, or for other uses;

h there would be advantage in the juxtaposition of warehousing and shopping uses, for example with the expansion of the motor trade or mail order retailing into this area.

B.70 Expansion of the central area into St. Hilda's would be unsuitable because of the barriers of the railway and Northern Route, and the presence of large areas of 'hard' development. Expansion eastwards is constrained by the Wilby railway, by the proposed Marton Motorway, by heavy industry and by the housing which, though old, is generally in better condition than that to the west.

B.71 The only serious alternative to westward extension is growth southwards along Linthorpe Road. There has been a tendency for this to happen in recent years although it has been resisted by the Corporation in its planning policy. It is rejected for the following reasons:

a it would require the demolition of better quality housing compared with that north of Union Street, for several blocks behind both sides of Linthorpe Road;

b it would intensify the present nuisance caused by car parking and traffic in the adjacent residential area;

c it would increase the demand for the Cross Town Route with the problems that would entail;

d it would inhibit the effective redevelopment of the existing central area and impede an orderly process of phased expansion of the central area;

e it would lead to a shopping centre nearly a mile in length but with no development in depth;

f it would not be well related to the warehousing and service industries for which the most readily available space is at Cannon Street.

B.72 The strongest argument apparently in favour of southward extension is that it represents a continuation of recent trends. But the reason for these trends is that the hinterland of Middlesbrough central area has always been to the south, mainly within the borough boundary and in the areas to the east at Eston. The main, and obvious line of access has been Linthorpe Road. But this must change in the future, if the central area is to grow, for the following reasons:

a the population of the Middlesbrough borough will at best remain constant in the future, because no land remains for development. The new areas for housing development lie further out, at South Middlesbrough and Leazesdale;

b the easiest means of access by road to the central area for people living in these new areas will be via the new A19 and the Northern Route, and later via Marton Motorway, not through the existing roads such as Acklam or Linthorpe Road;

c the effect of this will, in itself, tend to reverse

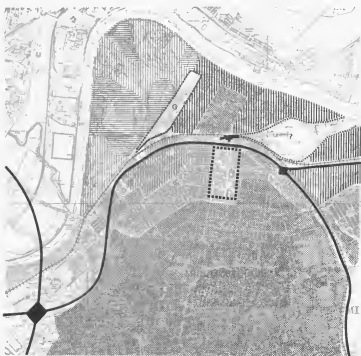


Figure 8.2 NORTH MIDDLESBROUGH POTENTIAL



current trends and will lead to an increased demand for shopping in what will become the most accessible part, that is the existing central area.

8.73 The implications for transportation of extending the central area southwards instead of westwards have been considered. The analysis indicated that either direction of growth could be accommodated on basically the same road system, with no significant difference in cost. In view of the strong land use advantages it is considered that the central area should extend westwards, where warehousing, open space and other uses could be integrated in a single system and where development could proceed in stages on a flexible basis.

The district plan

The aims of planning for North Middlesbrough

8.74 The context of North Middlesbrough in the proposed urban structure policy for Teesside was described in chapter 6. The main activity proposed for the district is the regional centre for Teesside, to be developed in the midst of an area requiring virtually complete urban renewal.

8.75 The major task in North Middlesbrough is to renew the outworn urban fabric of the nineteenth century and to establish a new townscape which will provide a safe, healthy, convenient and attractive environment for its inhabitants and a fitting setting for the regional centre of Teesside. If new industry and commerce is to be tempted to come to Teesside, if the best industrial and business managers, the best professional and academic staff and the best skilled workers are to be persuaded to come to, or to stay in, Teesside it will not be sufficient for redevelopment to be merely an improvement on what has been removed; it will need to be of a quality that is equal to the best of the new, expanded or renewed towns in Britain and Europe.

8.76 In undertaking renewal it will be necessary not only to eliminate the faults which now exist but also to ensure that new in-built faults are avoided. The nineteenth century is now condemned for the squalor and disease it fostered by building crowded housing and producing smoke and grime. Today, successful efforts are being made to eliminate the smoke nuisance but another nuisance of a different kind is being created by traffic which, with its danger, noise and fumes, is allowed to move ceaselessly through shopping streets and residential areas. In endeavouring to 'keep the traffic flowing' by widening carriageways, narrowing footpaths and diversions on to alternative routes, far too little account is being taken of the consequent destruction of environmental quality. Whilst this problem is not peculiar to Teesside, the completion of this combined land use and transportation plan should provide opportunity to produce an exemplary solution.

8.77 Thus one of the main principles of the district plan is the segregation of pedestrians from vehicles and the rationalisation of traffic routes into primary through roads, secondary distributor roads, access and service roads according to their function. Whilst pedestrian routes must connect to traffic routes at points such as bus stops and car parks there should be a separate system of footpaths connecting residential areas to shops and offices and to parks, worked out as a carefully designed pattern through squares and landscaped areas and past interesting buildings. The main shopping centre, particularly, should be laid out around pedestrian ways and walks protected from the weather; safe, gay, warm and dry.

8.78 Landscaping, designed in relation to the river Tees and its tributaries, and bordering major highways, certain streets and main footpaths, should be used to create a green framework linking up and defining the environmental areas, be they residential, commercial, civic or industrial. In this way can the pleasant landscaped 'Tigams' of South Middlesbrough be extended into the central and northerly parts, thus permeating the whole urban area. A high standard must be sought in the design of individual buildings, in their grouping and in the relationships of buildings and spaces between, which is of the essence of town design. Good quality durable materials should be used throughout and as much care and attention needs to be given to paving, steps, lighting, seats and planting as to the buildings themselves.

8.79 A policy of building density needs to be worked out from which should emerge criteria for the location of high buildings, which can do so much to distinguish a town when skillfully sited and so much to disfigure it if located haphazardly. Open space can often provide a suitable setting for high buildings and there is logic in allowing greater height and greater plot ratios in the heart of an urban area. The skyline of the future regional centre as seen from the Northern Route approach could be a stimulating sight.

8.80 In all these matters the district plan itself can only provide a framework for development. There will be a need for a series of 3-dimensional action area studies to be prepared, based on the district plan, which will take the proposals up to a stage where architects can start the detailed design of the individual buildings.

The framework for North Middlesbrough

8.81 The planning base for the regional centre is formed by the interrelationship of the Northern Route, running east-to-west within a belt of landscape along the southern boundary of the railway; the redeveloped central area with its westward expansion, and adjacent sites for warehousing and service trades, alongside and to the south of the Northern Route; the civic and administrative offices immediately east of the shopping centre; and an important link from the centre to Albert Park comprising the Polytechnic, with its academic and residential buildings.

8.82 To east and west of the Polytechnic are the areas of rehabilitated housing which in turn connect with the better residential areas around Albert Park, altogether providing a populous residential hinterland closely linked with the regional centre.

8.83 Ironmasters is zoned for open space and warehousing, whilst St. Hilda's remains as at present, an area of mixed uses, with housing, warehousing and industry. The area from Middlesbrough Docks to the Cargo Fleet industrial area remains in use for industry and storage, though the future of the docks is not clear.

8.84 This layout is illustrated in figure 8.3 which represents a broad framework for guiding development rather than precisely defined land allocations and road alignments. The proposals are described in greater detail in the following paragraphs; their net effect is likely to be set shown in table 8.4. The anticipated

Table 8.4. North Middlesbrough, 1988-91

	1985	1991
population	46,800	22,900
manufacturing employment	10,000	6,000
service employment	20,000	30,000
retail sales (1980 prices)	£32 million	£60 million



Figure 8.3 NORTH MIDDLESBROUGH DISTRICT PLAN

- | | |
|-----------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|
| Regional centre | Polytechnic Precinct |
| Indeterminate boundary dependent on rate of growth. | District shopping centre (lower Linthorpe Road) |
| Service industry, storage and small scale industries, including docks and wharves. | Areas where existing use is low; future use indeterminate |
| Indeterminate boundary of service industry & storage. | Primary road system |
| Ironworks, possible abandonment by removing industry; reclamation by controlled tipping, long term use probably service industry and storage. | Main secondary distributor roads |
| Residential, including local shopping, education and open space. | Goods yards |
| Meyer open space, including institutions in large grounds. | Railway |
| | Railway station |

0 1/4 1/2 3/4 1 mile

distribution of population and employment in 1991 is shown in table 8.5.

Roads and public transport

8.85 The proposed road system for North Middlesbrough is shown in figures 8.4 and 8.5. The main feature is the Northern Route which forms part of the realigned A86-A1085, the east to west route through the whole of Teesside. To the east of the centre the Merton Motorway connects the Northern Route to Nunthorpe. In the south, it may prove necessary in the long term to provide a northern extension of the Merton Motorway across the river Tees to join the primary road system for Seel Sands. (See paragraph 7.31 and figure 8.6.) A route for it should be established and safeguarded.

8.86 Linked to these primary roads is a secondary system which comprises three roads running north to south and two running east to west. The north to south roads are Merton Road to the east of the centre, Linthorpe Road which connects to the centre itself at Borough Road, and Acklam Road to the west which connects with Union Street. The east to west roads are first, the route from South Bank Road via Smeaton Street, Borough Road and Union Street, passing the southern flank of the central area and its westbound extension, and joining the Northern Route via Crescent Road at the Newport intersection; and the second, further south along the northern boundary of Albert Park, comprising Longlands Road, Park Avenue North and Crescent Road, joining the Northern Route directly at the Newport intersection.

8.87 In addition to the secondary roads which serve

the central area from the adjoining districts to the south, direct regional connections to the centre are provided from the Northern Route along Albert Road and along the line of Boundary Road, which respectively form the east and west flanks of the centre. These two roads are connected by Borough Road along its southern boundary and by a surface level road beneath the Northern Route, which thus complete a 'box' of roads serving the centre. Albert Road continues northwards under the Northern Route to connect with the railway station and St. Hilda's. A connection with the Northern Route near Metz Bridge would give access to ironmasters and additional access to the warehousing area west of the centre.

8.88 Traffic assignments show that the only major road works required to complete this road system are those associated with the construction of the primary routes and their intersections, and the western part of the 'box' of roads around the central area. Otherwise the existing roads, with minor improvements, could probably cater for the anticipated traffic flows. Flows on the Northern Route would be of the order of 73,000 vehicles per day, requiring a dual three-lane motorway, and 40,000 vehicles a day on the new Merton Motorway, needing a dual two-lane motorway.

8.89 As a consequence of these proposals, the number of vehicles attracted to the central area would rise from 11,600 a day in 1988 to about 47,000 in 1991. These proposals are based on a restriction in the freedom of choice of mode of travel to the central area that would reduce the proportion of person-trips made by private transport from 73 per cent to about 69 per cent in 1991, compared with a figure of about 45 per cent in 1988.

Figure 8.4
CENTRAL MIDDLESBROUGH
CIRCULATION 1991



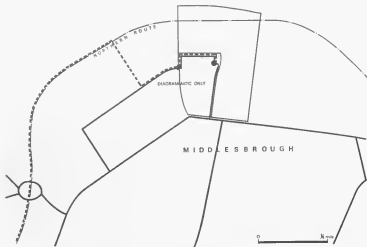


Figure 8.5
CENTRAL
MIDDLESBROUGH
1991 BUS ROUTES



8.80 The purpose of this revision is to make feasible the construction of the Northern Route, as explained in chapter 5. The means of restriction would be by a strict parking policy that would limit the total number of parking spaces to 12,000; and would regulate the use of the car parks by pricing policies and their location to discourage the commuter, that is the potential long term car parker, from using his car.

8.81 The public transport road services will have three components:

a express bus services would gain access to the central area via the Northern Route and would terminate in a large central bus station;

b normal stopping bus services along the secondary distributor road system; some of these would pass through the central bus station but others would pass through what would virtually be subsidiary bus stations on Borough and Boundary Roads;

c a circular bus service, or feeder service, along Borough Road, Albert Road, Station Street, Boundary Road, Corporation Road and South Street; the traffic on this service would justify something of the order of a 3-minute service at peak periods and would connect the central and the two subsidiary bus stations, the peripheral car parks and the points of pedestrian access to the central area.

More detailed study is needed in conjunction with the public transport operators, but the traffic assignments indicate that a system of this character and quality would be both necessary and feasible.

The central area

8.82 The central area proper, which would contain shopping, offices, restaurants, cultural and entertainment facilities, is bounded by the Northern Route, Polled Street on the east, Fleetham Street on the west and Borough Road and the Polytechnic on the south (see figure 8.6). It comprises about 130 acres, of which some 100 acres are within the area defined by the draft Town Centre Map, the remainder being provided for westward expansion. The reserve area will probably not be required within fifteen years and the extent of its utilisation will depend not only on the demand for shopping and office space but on the density of development in the present core and the amount and form of car parking. However, the road pattern and land use allocation west of the present centre is such as to allow for a wide range of space requirements.

8.83 Whilst the detailed planning of the central area should properly be the subject of an action area plan and is thus outside the scope of the District Plan, the proposals nevertheless demonstrate broadly how the centre might function. They incorporate a system of pedestrian ways, linked to the surrounding areas and to Albert Park, and separated from, but conveniently near to, the secondary and local distributor roads. Within the centre the pedestrian ways become the main shopping streets and would be linked to the car parks, bus stops and bus stations.

8.84 The car parks are placed alongside the perimeter roads of the centre where they are easily accessible for cars both without and for pedestrians from within. The buses would use the perimeter roads and provision is made for a local distributor road within the area of the 'box' to serve a bus terminal station. This would provide excellent architectural opportunities to relate a public transport concourse to a major, possibly covered and air conditioned, shopping and commercial centre.

8.85 Within this broad framework there is scope for various alternative methods of pedestrian and vehicular segregation and of servicing and car parking to be explored. The design for C.D.A. No. 2 in which pedestrians and vehicular movement are separated at ground level but where servicing is at first floor and parking at second floor could be further developed, or alternatively a transition could be made to a more complete form of vertical segregation. Underground car parking or servicing is likely to be very expensive because of ground water conditions but the possibility of providing for car parking in linked multi-storey blocks should be explored because of the advantages to be gained in obtaining economic land usage and a cohesiveness in the overall layout of the centre.

Newport Road—Gannon Street area

8.86 To the west of the central area, beyond Fleetham Street, lies the large area of obsolete housing at Newport now being rapidly cleared. This area is shown as being entirely redeveloped with an almost complete change of use. It is the area proposed for the service industries, wholesale distribution and storage uses needed to support, and be supported by, the central area and its hinterland. Some 80 acres are shown on the plan for this purpose together with about 20 acres for the long term expansion of the central area. Any more precise design of this part of the area must await knowledge of the exact nature of the potential uses.

8.87 Integrated with these uses are some 75 acres of open space which can serve vital short and long term interests in the area south of the railway. In the short term, whilst the general redevelopment of the dense housing areas is being undertaken, it can be used for much needed recreational space and in the long term as reserve space for possible extensions of central area and auxiliary functions as yet unknown. In the short term also the Polytechnic will need playing fields which could conveniently be provided here. Suggested methods of providing temporary landscape treatment are given in chapter 15.

8.88 The northern strip of the cleared housing at Newport is allocated for the construction of the Northern Route, the scale of which is such that it must be built within a generous landscaped belt, thus effecting a fine approach to the regional centre and at the same time becoming itself a visual asset to the centre when seen from the various parts of the urban area.

Civic buildings

8.89 Some 20 acres of land around Victoria Square is recommended to make provision for a reasonable concentration of civic buildings to serve the whole of Teesside. This will afford scope for an impressive architectural grouping of civic buildings on land at present occupied by poor housing and obsolete property, much of it already owned by Middlesbrough Corporation.

Teesside Polytechnic

8.100 The site recommended for the Polytechnic is an extension of the site of the present Conventine College, the Further Education Precinct, southwards to Albert Park. If the Polytechnic were to be developed there, it would probably require initially about 27 acres, an area containing about 640 houses. Subsequent land for an

Figure 8.6
CENTRAL
MIDDLESBROUGH
LAND USE 1991



extension of the site could if necessary become available in adjacent housing areas to the east. It seems possible that a programme of housing clearance could be undertaken, and that sufficient land is both cleared and in council ownership to permit work on the first hotel to start during 1988. By siting the new Polytechnic between central area and park, an excellent opportunity is afforded for a fine development of interrelated academic and residential buildings, the latter with south-facing views overlooking Albert Park.

8.101 In addition to the Borough Road site, land for playing fields would be required though they need not necessarily be immediately next to the buildings for the Polytechnic. On this basis, the playing fields could be located in Union Street on one of the temporarily cleared sites.

Residential areas

8.102 The remaining land in this part of North Middlesbrough comprises the residential areas south of Union Street and Borough Road on either side of the Polytechnic site. It is here that a major effort of rehabilitation of dwellings and environment must be directed, for the areas are particularly suited to remain in residential use and their present condition is sufficiently superior to other areas to preclude them from clearance and redevelopment for many years. In bringing about this comprehensive rehabilitation the following changes will occur:

- a clearance of roughly a quarter of the buildings to give improved standards of circulation, air parking and open space;
- b improvements to the remaining dwellings;
- c improvements to landscape and street lighting;
- d restructuring of the shopping facilities to form local centres at Pallmerston Road and Waterloo Road and a district centre on Linthorpe Road based on the Co-operative Store and the Bowling Alley development;
- e restructuring of the schools provision;
- f reorganisation of pedestrian and vehicular circulation.

8.103 Because of the importance of commencing this large scale and complex task of rehabilitation, an action area plan has been prepared for a part of this area around Southfield Road, and is described in chapter 12.

Ironmasters, St. Hilda's and the Dock

8.104 The proposals for Ironmasters are described in chapter 3. It is not expected that there will be much change in the mixture of uses in St. Hilda's. The few remaining old dwellings are likely to be cleared and some environmental improvements should be con-

sidered in the area of recently redeveloped housing. Sites vacated by heavy industry would be redeveloped for service industry which would be appropriate in the context of planning policy for North Middlesbrough as a whole.

8.105 Whilst proposals for the future use of the Dock area must inevitably be tentative, there is sufficient land investment in the form of heavy industry to ensure its continued use primarily as an industrial and storage area.

Implementation

8.106 To transform North Middlesbrough into the Teesside regional centre will require a determined and sustained effort on the part of Government, local authorities and private enterprise, with the new Teesside County Borough playing a key role. Fundamentally the need is to establish a partnership in planning and redevelopment so that it may become at the same time attractive to inhabitants and visitors and profitable to public and private developers, industrialists and retailers.

8.107 In the public sector this planning and investment policy will need to be vigorously pursued in regard of highways, car parking and transport services in order to provide the best possible scenes, both by car and public transport, to the central area. Investment in civil and further education uses should also be channelled into the central area by developing the County Borough's administrative and public buildings and the proposed Teesside Polytechnic from the existing civil and further education nucleus. This can be done by using adjacent lands at present occupied by obsolete housing.

8.108 In step with this direct action the local authority will need to encourage private investment in commercial, cultural and entertainment developments. This should all take place within the context of the comprehensive plan and to ensure that this is so the authority will need to keep ahead of events by preparing three dimensional action area studies that will provide potential developers with basic information.

8.109 By using these positive action plans in combination with their powers of development control it should be possible to ensure that the various individual developments actually built live up to the ideals of the planning principles and aims and that together they make a worthy and comprehensive contribution to the urban scene. Thus the formation of an organisation capable of expeditiously preparing the action plans required becomes a high priority in the work of the new Teesside County Borough.

8.110 The reason for this urgency is that much of the redevelopment of North Middlesbrough should take

Table 8.6. Population and employment, North Middlesbrough, 1985 ('000's)

	population	employment		
		manufacturing	services	total
1. Ironmasters	0	0.5		0.5
2. St. Hilda's	1.2	2.8	0.0	2.8
3. Middlesbrough Dock	0	0.8	0.8	1.6
4. Central area	3.1	0.5	20.3	20.8
5. Housing and other areas				
Newport	2.3	0.8	3.3	4.1
Corporation Road	4.8	0.1	2.8	2.9
Graham	0.2	0.2	0.5	0.7
Southfield	4.8	0.1	5.4	5.5
TOTAL (rounded)	22.2	6.4	30.5	36.9

place during the next ten years. If this can be accomplished then there is a reasonable prospect that the aim of creating a regional centre will be successful. But if this redevelopment is delayed then the prospect is for a steady decline in the relative importance of the Middlesbrough central area as its trade is drained away to the new district shopping centres.

8.111 The immediate work in the public sector during the next ten years therefore will be:

a complete the physical development of C.D.A. No. 2, Linthorpe Road and Albert Road;

b prepare designs and attract investment for the next C.D.A., in the northwest quadrant, with provision for an increment of the order of 200,000 square feet of shopping floor-space including a retail market, car parking and a bus station;

c construct the Northern Route from the A10 to the

central area and the connection to the future Merdon Motorway;

d prepare a development plan for the Polytechnic and start its implementation;

e complete the clearance of the housing areas in S.H.E.D. priority groups 1 and 2 and redevelop the recommended sites;

f prepare temporary landscaping schemes for cleared sites;

g attract private developments in shopping, wholesale distribution, storage, and Government offices.

8.112 By pressing ahead with integration and determination on all these fronts simultaneously, a coherent scheme of urban renewal can be accomplished at one time, stretching from the railway station to Albert Park. Such an opportunity has few parallels and it will not occur again on Teesside for a century.



9 The Ironmasters District

Summary

a The Ironmasters District is an area of 384 acres of which about half is derelict and much of the remainder is likely to go out of its current use in the future.

b The two biggest problems are its inaccessibility by road and its dismal appearance. The first of these will be overcome by the construction of the Northern Route.

c The second problem should be remedied by using the district for the controlled tipping of domestic refuse and incinerator ash, for which land will be needed within Tameside, and its subsequent reclamation by landscape treatment including the planting of trees.

d The most likely and suitable permanent uses are for service industry, wholesale distribution and storage, and for open space with the refuse incinerator plant also remaining in use, its ash being taken away by river barges.

The general situation

9.1 Some 384 acres in extent, Ironmasters lies at the heart of urban Tameside in a major bend of the river. It occupies, together with St. Hilda's and the dock areas to the east, all the land in North Middlesbrough situated between the Tame and the Stockton to Middlesbrough railway to the south. It is in the middle of the industrial belt which follows the river through Tameside and is less than a mile from the Middlesbrough shopping centre.

9.2 So located, and being the original home of the nineteenth century iron industry now being replaced by larger works on larger sites down stream, there appeared in Ironmasters to be one of the biggest single opportunities on Tameside to change obscurity and decay into thriving new development; to create a major centre of activity between town hall and Tame which by its sheer contrast in appearance and efficiency, would arouse admiration and delight in the minds of all who have witnessed its grim expense during recent years.

9.3 The special nature and complexities of the site, however, have militated against the achievement of this stimulating objective. Every possible use for the area which might have brought about an early transformation has been carefully studied and reluctantly rejected for compelling reasons. The resulting recommendations, therefore, may appear to be dull and unimaginative. They are, in fact, well worthwhile visually in the longer term and have the merits of being practical and economical.

9.4 Whilst the original area of housing at St. Hilda's, which was carefully planned around a central church and market place for the workers in Ironmasters, has been redeveloped since World War II Ironmasters itself has gradually run down as changes

in the scale of production have caused a demand for larger sites and an increasing reliance on imported iron ores has attracted the new developments nearer to the mouth of the Tame where land was available alongside deeper water.

9.5 The sites left vacant by this movement have not proved attractive either to light industry or warehousing or to new industries coming to Tameside. The local labour force has been dispersed over the rest of Middlesbrough as slum clearance schemes have progressed. The District has relied on the railways for communications, access by road being along poor routes which thread their way across the railway lines. There has been a progressive abandonment of the site during the 1980's and 1990's, until today only 257 of the 384 acres are in active use. The remainder is derelict, some of the plant and buildings being in ruins or in course of demolition, and the wharves disused. The effect is intensified by the poor state of much of the land lying between the District and the central area of Middlesbrough.

9.6 The likely situation in the long term, therefore, is that the whole site will become available for development. Its attractions are that it is a large area close to the existing town centre of Middlesbrough and to the proposed regional centre; it has the potential visual advantage that could be afforded by the river and its associated large scale industries; and it has wharves, though this last may be short lived. Drawbacks are that it has poor road access and obsolete services; is affected by air pollution from heavy industry across the river to the west and is subject to noise nuisance at the north end, also from industry across the river. In total these factors represent a serious constraint on future prospects for re-use.

Present uses, ownership and condition

9.7 The use and ownership of the district in 1995, illustrated in figure 9.1, is given in table 9.1. Those

Table 9.1. Use and ownership of land, Ironmasters, 1995 (acres)

	in use	derelict	total
British Steel Corporation	114	143	257
other manufacturing firms	24	34	58
British Rail	64	0	64
public roads	6	0	6
TOTAL (rounded)	307	177	384

nearly half the site is lying derelict, mainly in two large portions at the north and south ends, and many of the buildings are old and in poor condition. At present about 3,200 people (mainly men) are employed at the site.

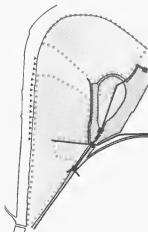


Figure 9.1 IRONMASTERS EXISTING



Communications

9.8 British Rail uses its land for three purposes. The main line to Middlesbrough and the goods yards are part of their general activities for the town; a branch line provides access to the wharves lying downstream from Ironmasters; and the reversing loop is in active use. Many of the old railway lines traversing the site have been removed and it is expected that this will continue. The site will be permanently bounded, however, on the eastern flank by the main line railway which serves the goods depot and main passenger station. It is reasonable to assume that site intrusions such as the single line reversing loop and the level crossings on Depot Road will in time be removed.

9.9 The wharves still remaining in use or still usable are shown on figure 9.1. None above Dent's Wharf is in regular use, however, apart from the temporary use of the Ayrsonne Wharf for the movement of material resulting from the demolition of Giers Mills. The future policy of the Tees and Hartlepool Port Authority will be to concentrate dredging operations to the river downstream from Middlesbrough Dock. Thus, in future, there will be no deep dredged channel opposite the Ironmasters wharves and this will particularly affect the wharves on the west of the site where silting already occurs.

9.10 Road access is poor, the Forty Foot Road being the only public highway serving the site. It lies on the

eastern side of the area and access to it is by three routes, each crossing the railway. The Marsh Street Bridge is 24 feet wide, but the approach roads are only 13 feet and 17 feet and both involve a tight, right-angle bend. The Metz Bridge, in the middle, is 28 feet wide but access from it to the Forty Foot Road is by a ramp and a very sharp bend; roads thence to the town centre have to pass under the main railway by one of four bridges of which the highest has a headroom of 13 feet 6 inches, the lowest 5 feet. The Marsh Street and Metz Bridges are also subject to weight restriction, 5 tons in the case of the Metz Bridge. Finally, access from the north is along Depot Road across unguarded and ill-defined level crossings.

Relief, soil and drainage

9.11 The site before development was flat, low lying and subject to regular flooding. This has been overcome by the disposal of waste slag from blast furnaces which has raised the level of the site on average by 3 feet, though this is not consistent. Flooding occurs intermittently in low lying parts usually due to a coincidence of heavy rainfall and high tides. The uneven deposition of slag has caused a number of flat plateaux to be formed over the area. The solidified slag has become hard but porous allowing good natural drainage. At two places the slag has been concentrated into large spoil banks, one on the north side on the site of the old Acklam Works and the second alongside the river on the Newport Works site. Both heaps have been partly excavated, the north being presently used as a source of fill.

9.12 The sub-soil conditions are not known in detail, but there is a hard layer of gravel at 40-70 feet below sea level. Trial bores show that single-storey buildings could be erected on pad or raft foundations without danger of intolerable settlement. The buildings would be suitable for storage uses without heavy machinery. For buildings of two or more storeys a pile foundation might be necessary. The high sulphate content means that concrete below ground level would have to be protected from sulphur attack. There is no top soil on the site because of the past intensive industrial use and the overlying slag material.

Services

9.13 Services to the site are laid out in a haphazard fashion and are mainly obsolete. It is probable that any new development on the site would have to be provided with new services. The site is crossed by main electricity cables from the North Tees Power Station, and sources of supply for both gas and electricity are close to hand.

Pollution, noise and amenity

9.14 The atmosphere is relatively polluted, but the pollutants are changing in concentration and character. Formerly, the main sources of pollution were the works in the District, and the nearby housing which caused heavy smoke, grit and dust. This type of pollution has improved considerably in the last ten years as works have closed and so houses have been cleared; and the improvement is likely to continue as smoke control schemes are implemented, and existing sources of pollution eliminated. However, the site still suffers one of the highest concentrations of this type of pollution in Teesside and in addition gaseous pollution from the

chemical and other works on the north bank of the Tees is intense.

8.15 River pollution, too, is severe because of the discharge of untreated sewage and industrial effluent into the river upstream as far as Derlington. The proposed Teesside sewerage and sewage disposal scheme should alleviate this problem.

8.16 The northern part of the site is noisy, in part because of the shipbuilding yards on the opposite bank of the river.

8.17 Views from the north of the site are dramatic. On the opposite bank of the river is a belt of large works culminating in the Furness shipbuilding yards. Further downstream is the Transporter Bridge and distant views of the Iron and steel works along the lower estuary. The river itself is of sufficient size to add considerably to the quality of these views. Indeed, the view in the foreground is of diverse sites, obsolescent housing and mixed industry. But, in the middle distance is the new residential redevelopment of St. Hilda's on a slight rise, and the larger buildings of the Middlesbrough central area. This view is likely to improve as the shopping centre itself is renewed. Finally, the background to the south is formed by the long line of the Cleveland Hills.

The availability of land for redevelopment

8.18 Sufficient is known of the plans of firms at present occupying the site for some tentative conclusions to be drawn about the availability of land. The most readily available land is a tract of 125 acres in the north of the site and 34 acres in the south. The steel and iron works formerly on these sites have been cleared and much of this land has been offered for sale, mainly by the British Steel Corporation.

8.19 The land which is currently in use lies mainly in the heart of the District alongside the railway. This comprises about 108 acres including the Ayton, Britania, and Bridge & Construction Works of the British Steel Corporation and the recently modernised and extended works of Richard Hill Ltd. It is very difficult to assess the future life of the British Steel Corporation's works but it is at least possible that they will be closed during the next twenty years or so (see chapter 2, paragraph 2.76). The Richard Hill works, however, is likely to remain in operation. Much of the land in the ownership of British Rail is in the same category, that is, likely to remain in use.

8.20 A further 47 acres is in an intermediate category. It is land mainly in the ownership of the British Steel Corporation that is in current use but for more temporary activities which may well cease in the near future.

Possible uses

8.21 The basic problem of Ironmasters is to find a suitable use for land which from the point of view of its location might be well suited for civic, education and residential functions but which cannot be so used because of certain serious adverse factors. There is no case for residential development because of the high level of atmospheric pollution and the noise from industry and adjoining sites. These drawbacks also militate against major civic or educational uses for which, in any case, there are excellent and wholly appropriate sites adjoining the existing central area, south of the railway, with adequate room for expansion (see chapter 3).

8.22 It is evident that the area would become suitable for service industry, wholesale distribution and storage if its environment was improved and if it were given good access from the Northern Route. The question, therefore, is whether there are any alternative activities which have a stronger claim to the whole of the site, or which could share the site with these uses.

8.23 There is a case for development of part of the site for open space and landscaping. Playing fields for the public or for the Polytechnic could be located in the area and the visual attraction of the riverside could be enhanced by the development of riverside parkland and footways. However, it could take time to establish these uses. The slag material covering much of the site supports only limited vegetation, and it would be necessary to create better soil conditions before trees or playing fields would flourish.

8.24 It is most unlikely that the site would be attractive to heavy industry as these uses are at present abandoning it. The remaining potential uses are therefore service or manufacturing industry. Ironmasters could use a site developed for light industry, but two factors argue strongly against major development of this kind:

a other sites are already available, for example at Thornaby and Eaglescliffe, and are likely to be more attractive to industrialists because of their better environment and more direct links to the regional road system. Also from an urban structure point of view there are advantages in locating further new estates adjoining the major areas of new housing development rather than at Ironmasters;

b major development for light industry here would generate further traffic on the Northern Route. It was shown in chapter 5 that parking restrictions will be needed in Middlesbrough central area if the capacity of the Northern Route is not to be exceeded. For the same reasons it would be unwise to allocate a major part of Ironmasters for light industry if it were a labour intensive industry or would generate a lot of traffic.

8.25 However, a special type of industrial development would be more acceptable in the near future and might be more likely to be seeking a site of this kind, though its advent is not predictable in the way that light industry might be. This is an industrial use involving low densities of workers per acre and having some use for rail or water access. These are comparatively rare though there are examples already on Teesside in suppliers of building materials and firms engaged in timber or concrete fabrication. Individual projects could require a comparatively large site and a relatively small labour force, but might rely on road transport for movement of goods.

8.26 The development of a major part of the area for service industry, wholesale distribution and storage would have no disadvantages from a transport point of view, since these uses generate much less traffic than does light industry. This group of uses is therefore the most reasonable for Ironmasters.

Redevelopment proposals

8.27 Three underlying points have to borne in mind when formulating redevelopment proposals for Ironmasters. First, it is not possible to foresee clearly just when, or even whether, certain existing industries will close. Second, before redevelopment of any kind can take place the site needs to be reclaimed and levelled. Third, there are no known suitable uses requiring urgent possession of land here. Storage and open space

uses, for example, are likely to build up over a long period.

9.28 The advantages of Ironmasters are its size, its proximity to the new regional centre and its commanding outlook over the surrounding landscape. These are offset by the inherent factors already outlined, and briefly summarised as follows:

- a the site is lacking in the amenities which are necessary to attract new development; services, roads and suitable environment. They will have to be provided before redevelopment can be considered;

- b the choice of site use is hindered because of its severance from the rest of the urban area by the railway, a severance which will be strengthened by the proposed Northern Route even though it will provide improved access by road. This prevents any extension and integration of land use from surrounding areas;

- c the proposed Northern Route road would be severely overloaded by any use on Ironmasters which generated heavy traffic loads;

- d the existing land uses and the fact that the site needs to be rehabilitated make it unlikely that any part of the northern and central sections of the site would be ready for development before the late 1970's.

9.29 The solution to the problem of future use, therefore is reclamation, followed by redevelopment. This would allow satisfactory short term use of the land and would be sufficiently flexible to allow a number of alternative long-term uses to be considered.

Refuse disposal and reclamation

9.30 Before describing the reclamation proposals, it is necessary to describe briefly the refuse disposal problem of the new Teesside County Borough. During the next twenty-five years, the Authority will have to dispose of nearly four million tons of refuse, occupying a volume of more than twenty million cubic yards. Two methods of disposal are possible:

- a tipping of raw refuse which may have been treated by composting or pulverisation. This method would require, annually, about 25 acres to be filled to a depth of 6 feet;

- b disposal by incineration, reducing the bulk of refuse to about 10 per cent of its original volume, mainly as innocuous ash.

9.31 Land is available for between five and eight years by controlled tipping, the first method and that currently in use. Beyond that time, land would have to be found at a distance of more than six miles from Teesside. The only long-term solution is likely to be by incineration and it is understood that the new Authority is likely to favour this solution.

9.32 The use of Ironmasters as a central site for the disposal of domestic refuse, initially by controlled tipping and subsequently by incineration, would probably meet the requirements of the Authority in terms both of location and availability of land until the end of the century.

9.33 Of equal importance, the use of Ironmasters for refuse disposal would ease the problem of its reclamation. The slag material covering much of the site is capable of supporting only limited vegetation, the lack of moisture and the toxic nature of the material preventing the growth of trees and shrubs. Some interest has been shown in the possibility of salvaging waste material from the slag cover, the slag being redeposited in a desired land form. The main spoil banks have both been excavated at some time, the northern one at present being used for herd com.

9.34 It is proposed, therefore, that Ironmasters be tipped, initially by the controlled tipping of raw refuse and subsequently by ash from an incinerator on the site. With the addition of demolition rubble, this would give a suitable material for the establishment of a full range of vegetation.

9.35 The southern part of Ironmasters, the site of the old Newport Works, would be used for the controlled tipping of raw refuse to a depth of between 6 and 8 feet. This would give sufficient land for about three years tipping and would be in a form suitable for subsequent grassing and landscape treatment when covered with a thin layer of crushed and graded builders' rubble.

9.36 An incinerator would be constructed during this period at the north of the site. This should be built to modern designs with care taken to keep smoke pollution to the absolute minimum. Derby Corporation, for instance, have plans for such an incinerator. The incinerator ash would be tipped to a depth of about eight feet on land to be reclaimed at the north and in the middle of the site. This would give a suitable material for grassing and landscape treatment either after it had been covered with builders' rubble or directly planted by hydraulic seeding. Methods are described in chapter 15. Sufficient land would be available for tipping ash until the turn of the century. Part of the site could continue to be used beyond then, if required, for loading the ash on to river barges for disposal elsewhere.

9.37 The last problem in the reclamation of Ironmasters is the degree to which tree growth could be established. In the past, levels of atmospheric pollution have prevented this. Current trends in the level of pollution indicate that this might change provided that a soil cover and proper moisture conditions were established by the reclamation programme. This is briefly noted in chapter 15.

Road network

9.38 For the purposes of reclamation and the early development of the site the existing road pattern will continue in use. Access to the southern area will be along the existing Marsh Road but to eliminate the sharp turn off the railway bridge a new entrance and service road must be constructed. Depot Road will provide the major access to the site prior to the construction of the Northern Route road and should be improved accordingly.

9.39 The proposed network within the site should consist of a loop road from the Northern Route and Depot Road within which the area would be divided by secondary roads into a series of units serviced by local roads. The volume of traffic anticipated would not necessitate a one-way system. The site could be divided into four units of 25 acres, a pattern which would enable the expansion of works' sites within the unit and make for a simplified phased development programme.

Service industry, wholesale distribution and storage

9.40 These activities are expanding rapidly in parts of Teesside and by 1991 will employ an estimated total of 12,000 people. Their location reflects a need for quick, easy access to the main retail centres and for minimum delivery costs to Teesside industry and to the population at large. Most firms serve the area from only one premises and tend to choose sites near the centre of regional activity. Recent development has accordingly been concentrated on the nearest available land to

Middlebrough and Stockton town centres. There is every reason to suppose that continued development of these uses will occur as near as possible to the regional centre of Middlebrough, if land with good access is available.

9.41 In the proposals for North Middlebrough south of the railway an additional 60 acres of land for service industry, wholesale distribution and storage are provided in the Newport Road-Cannon Street area. It is expected that this will be exhausted within the first phase of the plan and therefore a further 100 acres are included in brownfields for these uses which have an approximate density of fifteen persons per acre. This land will be required sometime after 1975.

Open space system and walks

9.42 An important feature of the proposals is a riverside walk forming an integral part of the pedestrian network for the whole of North Middlebrough, allowing pedestrians to walk from the new city centre through to the public open space in the Cannon Street area. The riverside walk should be designed as a linear, scenic walk with the object of gaining the maximum benefit from the fine panoramic riverside views of Industrial Teesside as well as from the distant inland views of the redeveloped city centre. A wide strip should be left between the river and any future internal land use. On the riverside, mounds should be formed from builders' rubble and the waste heaps to screen the pedestrian from the nearest industries, but they should be pierced at selected view points. On the inner side groups of trees could be planted to give the pedestrian a similar feeling of visual protection from nearby clearance and tipping operations. The mounds and trees would also serve to screen the tipping and older industries from outside view points, particularly from the new A19 river crossing, during the reclamation period.

9.43 Even after clearance and redevelopment of the housing in North Middlebrough the remaining population will require open spaces. It is proposed that some 60 acres of land in the southern part of brownfields should be reclaimed and developed for this purpose, of which 30 acres would by that date be required for the Polytechnic. This area, balanced on the other side of the railway by the landscaped setting of the Northern Route, forms a natural open space unit which will be linked directly with the riverside walk and by means of footbridges with the public open space at Cannon Street.

Future land use

9.44 In total, therefore, the proposals for the long term development of brownfields are shown in table 9.2 and figure 9.2.

Table 9.2. Brownfields, long-term development (acres)

refuse disposal plant	20
warehousing and service industry	100
playing fields, riverside walk and open spaces	200
roads and footpaths	14
British Rail	50
TOTAL (reclaimed)	384

Note: the exact area of warehousing and playing fields, etc., would depend on the detailed planning of the riverside walk and the landscape treatment of brownfields.

Implementation and phasing

9.45 The comprehensive reclamation and redevelopment proposals, involving refuse disposal, revegetation, ground modelling and the provision of public open spaces, roads and services, clearly indicate the importance and urgency of bringing as much of the site as possible under public ownership. Apart from the need to make an early start on reclamation it is essential to prevent sporadic development which would further complicate and delay the development programme. In addition, whilst the proposed land use should prove both appropriate and satisfactory for a very considerable period, any change contemplated at a future date is likely to be facilitated if the site is publicly owned.

Phasing

9.46 The combined reclamation and redevelopment programme will extend over thirty years. It is anticipated that some thirty years will be needed to implement the reclamation work, divided into three phases (see figure 9.2).

9.47 *Phase 1 1968-1974:* The 54 acres in the southern half should be reclaimed by controlled tipping of refuse. An early start should be made on the construction of the riverside walk which, during this phase, will allow pedestrians to circulate within the site. The

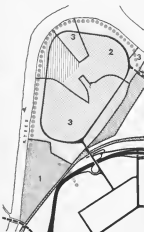
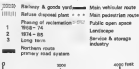


Figure 9.2 IRONMASTERS' DISTRICT: PROPOSALS



planting should be commenced because of its importance, particularly in relation to the Northern Route, and mounds should be formed along the riverside strip of open space. Access to the site would be along Marsh Road but with a new entrance. This would be replaced in Phase III by the connecting road from the Northern Route.

9.48 Phase II 1974-1985: Reclamation of the 114 acres in the northern part of the site should commence as soon as the incineration plant and refuse depot is constructed. It could operate simultaneously with Phase I, if necessary. The construction of the riverside walk and the tree planting should continue. Access would be along Depot Road and service roads should be laid on the line of the proposed secondary roads within the site. Later the main internal loop road should be started so that towards the end of the period the services can be laid and the first workshops and service industries move in.

9.49 Phase III 1985 to end of century: This phase covers the remaining 166 acres in the middle of the site which are now in use. The actual date of commencement and therefore the date when the reclamation will be completed depends on when land becomes available. The riverside walk should be completed together with the through link to the city centre which will connect Ironmasters with the public open space in the Cannon Street district. The loop road should be completed and linked to the access road from the Northern Route. The secondary and local roads should also be completed so that by the end of the period the final pattern of land use and communications should be complete.

Revegetation programme

9.50 If reclamation and revegetation is to be wholly successful it is essential that a team of experts in the various processes involved should work together from the outset within the framework of a master plan, prepared in the planning department of the local authority. The parks department would supply horticultural expertise and the cleansing department advice on methods of refuse disposal, the two acting in combination to ensure that the deposited matter, properly spread, consolidated and finished off with soil, would provide a suitable base for trees, shrubs and grass. Advice may also be obtained from the Forestry Commission or the National Agricultural Advisory Service. The programme should commence with a trial period followed by planting operations.

9.51 Stage I. Trial period: The initial work should be an examination to find the most suitable tree species by comparing the various growth rates in relation to soil conditions and the levels of atmospheric pollution. A control centre would need to be established in a clean atmosphere to allow for direct comparison of growth rates, and so ascertain the effect of the local conditions. During the trial period detailed records should be kept of the levels of atmospheric pollution and related weather conditions, particularly temperature inversions.

9.52 Trial plots should be established and it is recommended that two kinds of tree planting be used:

- a larger blocks of trees all planted, permitting fertilizer trials and examination of the possible success of windbreaks;

- b smaller units of individual species distributed throughout the site, allowing examination of growth rates and suitable species.

9.53 Stage II. Vegetation: Major tree planting should be undertaken after initial results are available from the trials, and a landscape scheme has been prepared for the reclaimed land. The planting should be related to the redevelopment programme and it is reasonable to expect that the first results of the trials will be available when the first reclaimed areas are ready for planting. The planting should be in blocks of mixed species to provide shelter for playing fields; landscape for the riverside walk; and screen planting in connection with the Northern Route.

Conclusion

9.54 Despite the apparent lack of drama in the proposals made and the clear inference that no sudden transformation of the desolation of Ironmasters into a scintillating centre of civic activity can be expected, the very real contribution to the well-being of Teesside which the proposals will bring about should be appreciated.

9.55 Whatever use might be selected for this important area, a first major and unavoidable task is that of reclamation of the very ground itself, which has been subjected to the most intensive and sustained heavy industrial use imaginable, including the complete overlaying with industrial slag. Roads are wholly inadequate in modern terms and services hopelessly outdated.

9.56 Turning to the fundamental needs of Teesside there is the unquestionable need to find a short and long term solution to the problem of refuse disposal. Relating needs to opportunities, therefore, there is logical, practical and economic sense in combining two important operations, the reclamation of Ironmasters by allocating part of it for controlled tipping of refuse in the short term, and other parts of it for scientific incinerated disposal in the longer term.

9.57 This task of reclamation, a real 'bringing back from the dead' in terms of land and earth, combined with the revegetation programme, the modelling of the ground and tree planting to form interesting riverside and other walks, the creation of grassed playing fields and a model estate for service industry in a park-like setting, will not only have immense social benefits to Teesside but will have growing visual impact on the inhabitants of surrounding neighbourhoods and visitors alike. Few tasks of physical redevelopment in the new Teesside will be either more rewarding or more interesting.

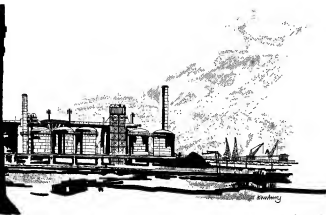
9.58 Scientists and educationalists should be encouraged to become actively involved in this task for, apart from the local and immediate interest, there are important lessons to be learned which will be of use in many other industrial areas at home and abroad. The interest aroused in the Lower Swansea Valley Project, an area with many similar problems, demonstrates the opportunity.

9.59 Research projects could be mounted on Ironmasters: students from local schools and youth organisations could take an active part in planting and maintaining the trees and shrubs. In so doing they would acquire a far greater appreciation of the delights of gardening than is gained from theory. Experience elsewhere has shown that this is the best way of all of safeguarding trees, parks and gardens from vandalism. The youthful participants will regard them as their trees!

8.60 The confidence of the remaining users of Ironmasters would be gained by inviting their co-operation in the programme, and, ideally, forming a partnership with the County Borough Authority to carry out the complex programme of acquisition, reclamation and development.

8.61 Much more detailed study is required before a final programme of work can be prepared ready for

implementation. The purpose of this report is to suggest a solution in principle for the rehabilitation and rescue of the Ironmasters District. It is felt that this vital task is one on which the new County Borough could well concentrate in order that they might demonstrate to the world their firm resolve to project Tyneside right on to the threshold of the twenty-first century.



10 Central Stockton district plan

Summary

a The main function of central Stockton in the urban structure policy is that it should continue to be the main shopping centre for western Teesside.

b The current land use proposals for the area, in the Stockton Town Centre Map, are broadly acceptable, with only two qualifications:

(i) the divide, which will become even more desolate with the closure of Stockton Quay, should be developed as an open space linked closely with the central area;

(ii) the increase in the amount of shopping floor space proposed in the C.D.A. for the east side of the High Street should be phased over a relatively long period.

c The current road proposals are less satisfactory and should be modified by the construction of a new Stockton motorway parallel to the railway. This would form part of the primary road system for Teesside, giving access to the central area from the west. It would replace the proposed road in the Town Centre Map passing north from Yarm Lane between the railway and the central area. Other changes to the road system are of a minor character.

d The greatest possible architectural skill should be given to the redevelopment of the High Street as a shopping street from which vehicular traffic would be excluded. The aim would be to retain something of the architectural character and scale of the High Street and to relate it more fully to the divide.

Existing conditions

10.1 Stockton is an ancient town which now forms the western part of Teesside. Its central feature is the High Street, still one of the finest in the North East, which owes its character not so much to the quality of the individual buildings, as to the collective form of buildings and spaces. The great width of the street, which is divided into two spaces by the delightful eighteenth century Town Hall standing in the middle and about half way along it, is emphasised by the uniform height of the buildings on either side, which are mostly of three stories. The spaces are made more interesting by the weaving building lines, and by the punctuation of the facades by side streets which on the east provide glimpses of the river. The almost continuous flanking buildings, Victorian rather than Georgian, have a consistent vertical expression which ensures an overall architectural harmony whilst permitting a considerable degree of individual freedom in design. Whilst the Town Hall is the dominant element in the composition, the tower of St. Thomas' Church provides a fine terminal feature at the north end of the street.

10.2 This visual character of the High Street presents a special problem when renewal is considered, because it is precisely these nineteenth century buildings that are the most likely to be redeveloped in the foreseeable future. Not all are structurally suitable for modern retailing and many are in poor condition. It is unlikely that the expense of either preservation or rehabilitation would be justified but the redevelopment of individual properties, based on a comprehensive plan for circulation and access, should be seriously considered as an alternative to comprehensive redevelopment in order to retain the basic character and scale of the street.

10.3 So far as the space between the buildings is concerned it is indeed remarkable that the street still continues to cope with heavy through traffic, main public transport bus services, private cars, car parking, a large two-day-per-week street market, central shopping, hotels, restaurants and some entertainment facilities. This is a salutary lesson from the town planners of the past in designing for growth and change.

10.4 It would be tragic indeed if, under pressure for speedy renewal, the exceptional character and atmosphere of Stockton High Street should be lost. Socially and architecturally an integrated redevelopment between High Street and the Tega has particularly exciting possibilities. The urban design problem in central Stockton is all the more interesting for Teesside because of the complete contrast with that of the Middlesbrough centre. The two tasks are essentially complementary in social, architectural and economic terms.

10.5 Away from the High Street, central Stockton has few buildings or areas of attraction (see figure 10.1). It comprises a zone of businesses, warehousing and service industry surrounded by an outer zone of older terrace housing. In both of these, considerable dereliction and decay are evident, particularly in the demolition and clearance of parts of the older areas of housing and in the dispiriting obsolescence on the waterfront.

Shopping

10.6 The most important land use in the area is shopping. The bulk of it is concentrated in the High Street, but some central area shops have extended into the numerous side streets which open off it, and rows of shops serving mainly local needs extend from the High Street along Yarm Lane and Norton Road. There are about 810,000 square feet of gross shopping floor space in the central area, and a further 182,000 square feet of local shops on the radial roads. These figures, of course, exclude the large street market. In 1966 the area had an annual retail turnover of about £12.1 million, with a further £3.5 million in the peripheral areas.

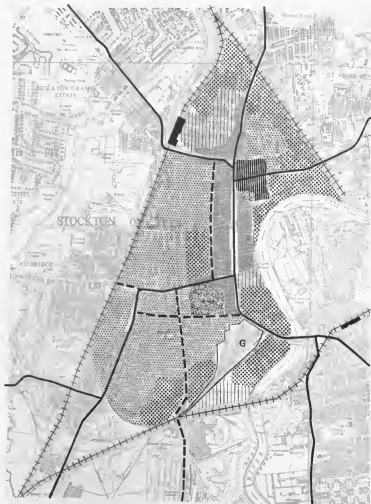
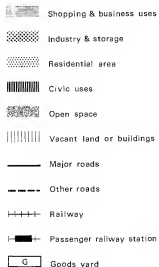


Figure 10.1
CENTRAL STOCKTON
EXISTING



10.7 Most of the buildings in shopping use date from the nineteenth century, although there is a substantial amount of recent development, and most of the ground floors of the buildings have been altered to meet the needs of changing retailing methods. The physical condition of the buildings varies considerably, and is not directly related to age. A good deal of piecemeal redevelopment has taken place recently mainly by redividing multiple stores, and older premises have been extensively modernised. This is so particularly on the west side of the street, and in the southwest corner, at the intersection of High Street and Yarn Lane. Generally the eastern frontage of the High Street is in poorer condition than is the west. Some redevelopment has occurred in the southeast section but there is also a substantial amount of poor property, the worst being in the southeast portion where no shops have been redeveloped since the war.

10.8 The shopping located on the radial roads leading from the town centre, although not strictly of central area type, includes some specialised shops which serve a wide hinterland but are unable to pay central area rents. The remaining shops along the radials and those located within the areas of by-law housing serve the purely local needs of the population living in central Stockton. Virtually all these shops occupy converted houses and many are in poor structural condition.

10.9 Thus, except for those on sites that have been redeveloped during the last thirty or forty years, the shops in central Stockton are generally housed in buildings that are structurally outmoded, and lack adequate storage and servicing facilities. It follows that a large amount of redevelopment of the shopping centre is necessary and is likely to take place during the next twenty-five years. This would be in addition to the redevelopment necessary to provide for the forecast increase in shopping floor space in the central area. The equally necessary redevelopment of the local shopping will be part of the process of redeveloping and rehabilitating the residential areas that it serves.

Offices

10.10 There is a substantial amount of office development in the centre, mainly concentrated in the High Street, and mainly above shops. In addition, in recent years there has been a considerable spread of offices into the surrounding area, mainly in converted dwelling houses on the radial roads leading from the centre, particularly along Yarn Road. These uses have been attracted by the lower rents of sites and the lower costs of converted houses compared with conditions in the High Street.

Industry and storage

10.11 Two foundries are situated near the goods station on the southern fringe of the centre, being part of the Bowfield industrial area which lies mainly south of the railway. They are likely to remain in operation for the foreseeable future although they create a nuisance for the adjoining houses, and are incompatible with the nearby central area uses. The other main concentration of manufacturing industry lies northwest of the central area, beside the railway and, more importantly, the road recently constructed as part of the ring road system for central Stockton. These industries include a clothing firm and a light manufacturing.

10.12 The land on the eastern fringe of the area near the Municipal Offices and north of Church Road is mainly devoted to motor garages and warehouses. Most of this property, which is in sound condition, is related to a modern layout and is likely to stay. On the east side of the High Street, at the rear of the shops on the frontage, are a number of warehouses and small industrial establishments. These are mostly housed in very poor buildings alongside an obsolete layout of roads and rail tracks. Even from a purely structural point of view this area is in urgent need of renewal. The large area of land immediately to the west of the High Street is also occupied by these types of uses. Around Prince Regent Street the local authority has defined a comprehensive development area to accommodate service industry, wholesale distribution, motor garages, showrooms and storage; a considerable amount of clearance and redevelopment has taken place. The rest of the area consists of warehouses and similar uses in old buildings, in an obsolete layout of narrow streets, and mixed with poor shops and housing. It is in urgent need of renewal and rationalisation, including the separation of commercial and residential uses. The land east of Bridge Road, which contained a mixture of housing, storage and motor garages, is now being cleared and redeveloped for storage and motor trades in a similar way to Prince Regent Street. This is likely to remain.

Civic uses and open spaces

10.13 Civic uses are mainly concentrated in Church Road near St Thomas' Church. Here, adjacent to the recently completed council offices, a library and swimming baths are under construction. The only significant existing open spaces are the churchyards at either end of the High Street. The greatest potential open space in the whole area, the banks of the river Test itself, is completely neglected. It looks like nothing as much as a vast industrial graveyard and it is more than time that it was regenerated in the interests of the living.

Housing

10.14 The rest of the area is mainly housing, most of it in the form of small tenement dwellings of the late nineteenth century. They are generally in moderate or poor physical condition, and obsolete by modern standards of internal and external space, basic amenities and car parking. The environment is very poor, with little play space, and particularly in the case of streets adjoining the central area there are serious problems of noise from service industries, danger from traffic, and nuisance from car parking which overflows from the town centre. All these areas are in fairly urgent need of renewal or rehabilitation of the buildings themselves, separation from industry and traffic and other environmental improvements. Some clearance has recently taken place north of Bishopston Lane and the site is awaiting housing redevelopment. Another area recently cleared is east of Bridge Road, where plans for redevelopment with service industries are proceeding.

10.15 Only a small part of the housing in the area is in reasonable condition. Exceptions are the more modern housing around Yarm Road, in the south, and the redevelopment site north of Church Road, both of which are likely to remain.

Communications

10.16 Until recently Stockton was the lowest bridging point on the Test and it remains the main focus for

roads in western Testside. The following main routes lead to the town centre: the A19 York to Sunderland trunk road; the A66 Darlington to Middlesbrough trunk road; the A177 Testside to Durham Road; and the A3088 which is the main road serving the industrial areas on the north bank of the Test. Each of these roads is a two-lane multi-purpose road used by heavy flows of through and local traffic, providing service access to adjacent uses and car parking. They converge on the High Street, which has been made into a dual carriageway, and there is a considerable congestion in the centre at peak hours.

10.17 The bulk of provision for car parking is on-street parking, including the wide central reservation of the High Street. This latter poses problems on market days, when the lack of parking space is acute. Temporary off-street car parking is available, on cleared sites, especially north of Bishopston Lane and east of Bridge Road, but when they are redeveloped the shortage of space will be serious, unless permanent off-street car parks are provided to replace them. Most of the shops on the High Street do not have provision for servicing from the rear and the presence of parked service vehicles in the High Street adds to congestion. The larger multiple stores in the newest premises generally have servicing from the rear or from side streets.

10.18 The focus of pedestrian movements is the High Street, particularly in the busy northwest sector where the most popular shops are sited. Pedestrian movements across the High Street conflict with the major traffic flows of the whole area and though accidents are infrequent this is a situation which should be alleviated as soon as possible. Public transport is mainly by bus but there is no bus station in the town centre, the buses operating from stands along the High Street.

10.19 Stockton goods and passenger stations are at either end of the High Street, and they are likely to be in operation for the foreseeable future. Stockton Quay is to close; the re-use of the site has not yet been determined, but it offers an exceptional opportunity to develop the riverbanks for amenity purposes in close relationship with the High Street.

Current planning proposals

10.20 A plan has been prepared for Stockton Town Centre, and approved by the relevant local authorities, in the form proposed in the Planning Bulletin on Town Centres, an *Approach to Renewal* (Ministry of Housing and Local Government). This plan is shown in simplified form in figure 10.2. Its main features are that the shopping centre should remain concentrated in the existing High Street and its side streets, and that ultimately the High Street should be traffic free, except for car parking and access to the open market in the middle of it. To achieve this, the following basic road proposals were made:

a) a major new route would be provided west of the town centre, together with a new length of road to link the A66 to it, passing through Holy Trinity Church Yard, to take the major through traffic. So far no money has been spent either on clearance for the construction of the roads or on major redevelopments designed to accommodate them;

b) two main service roads were proposed, one on either side of the High Street, the western one on the line of Prince Regent Street and Nelson Terrace, the eastern one closely following the river bank. Part of the eastern road has been built and compulsory purchase orders have been made for further sections of it. The

western service road has been widened in places and new developments in the Prince Regent Street area are laid out to conform with it.

10.21 The plan also defines areas for warehousing, motor trades and service industry, mainly in the Prince Regent Street Comprehensive Development Area and in the land east of Bridge Road. Development in these areas is already going ahead.

10.22 The other significant proposal related to shopping redevelopment. The plan seeks to provide a sound framework for the renewal of the shopping area by creating a pedestrian precinct on the High Street and introducing rear service roads and service areas. It is proposed to start this redevelopment in the southeast quadrant of the High Street, the area of poorest property, the method of implementation being by Comprehensive Development Area procedure. A C.D.A. map has been approved by the Minister of Housing and Local Government, and the latest design has received the approval of the Royal Fine Art Commission, to whom it was referred by the Minister. Considerable areas of property have been acquired by the local authority in anticipation of the frission of the scheme and a Compulsory Purchase Order has been confirmed on the rest. A national development company has undertaken to carry out the scheme and plans have been submitted to the Minister for formal planning permission. The latest proposals provide 215,000 square feet of retail sales and storage floor space of which 83,000 is in replacement of existing uses, thus contributing a net increase of 132,000 square feet. The design also provides for a department store of 66,000 square feet and for the replacement of an existing hotel, offices, and a certain amount of residential accommodation.

10.23 Many of the features of the Town Centre Map are obviously based, particularly its fundamental theme of retaining the High Street as the main shopping centre and making it a pedestrian precinct by providing new roads for vehicular traffic. But the map was prepared on the basis that the central area need serve only its immediate hinterland in western Teesside. If Stockton is considered in the wider context of an expanded and redeveloped Teesside then the proposals for the road system and for shopping need to be revised.

Urban structure policy

10.24 The function of central Stockton in the Teesside urban structure policy was set out in chapter 8. It is to remain a major shopping centre serving the western part of Teesside but its status is expected to be lower than that of Middlesbrough which should become the dominant, regional centre for Teesside.

Employment

10.25 Employment is expected to rise considerably in the town centre entirely as a consequence of its increased trade and activity, both male and female service employment being expected to double in size by 1991. Employment in manufacturing industry will remain stable as no changes are expected; and employment in services outside the town centre will fall as a consequence of the redevelopment of the housing areas. The extent of these changes is shown in table 10.1.

Housing

10.26 The extensive and necessary process of redeveloping and rehabilitating the older housing areas

Table 10.1. Employment, central Stockton ('000's)

	town centre		remainder	
	1966	1991	1966	1991
manufacturing, male	0.6	0.8	1.2	1.3
female	0.2	0.2	0.4	0.3
sub-total	0.7	0.9	1.6	1.6
services, male	2.8	4.5	2.5	1.7
female	3.3	5.4	1.8	1.5
sub-total	6.6	11.2	4.3	3.5
TOTAL, male	3.4	6.3	3.7	3.0
female	2.9	5.6	2.2	2.1
TOTAL (estimated)	6.6	12.7	6.3	5.0

Note: the town centre includes the High Street, the land to the east as far as the fleet, and to the west as far as Harington Road.

will mean that the total number of dwellings end therefore the total population of the area will fall. The population of the whole of central Stockton is likely to fall from 14,000 in 1965 to about 9,000 in 1991 as a result of the following recommended housing policy (see table 10.2).

Table 10.2. Housing clearance, central Stockton

number of dwellings in 1966	4,800
to be cleared	2,700
to be redeveloped	1,500
number of dwellings by 1991	3,600

The full programme includes the clearance and redevelopment or the rehabilitation of virtually the entire stock of houses in central Stockton, on the basis of the policy devised in S.H.E.D., and described in chapter 3, paragraph 3.36. As a consequence of this policy, net residential densities will fall from about 60 persons per acre to about 50 persons per acre assuming that the redevelopment takes place at a density of about 100 persons per acre.

Shopping

10.27 Urban structure policy has also defined the future provision of retail floor space for central Stockton. The totals are given in the following table:

Table 10.3. Gross shopping floor space, central Stockton ('000's sq. ft.)

	town centre	remainder
1966	813	563
1991	683	not estimated
1991	1,100	96

10.28 The provision shown for the town centre is that required in order that Stockton may remain a shopping centre of considerable status serving much of western Teesside. If this amount of floor space were to be provided by the construction of an additional 290,000 square feet in the twenty-five year period and by the redevelopment of much of the existing floor space, then it is estimated that retail sales per square foot would rise from about £18 in 1966 to about £27 in 1991 at constant prices. This would probably be sufficient to give an adequate return on investment as it lies within the range of predicted rates of turnover of £24-£30 per square foot. A more careful analysis would, however, need to be made at each stage of the development of the central area to compare the likely costs of

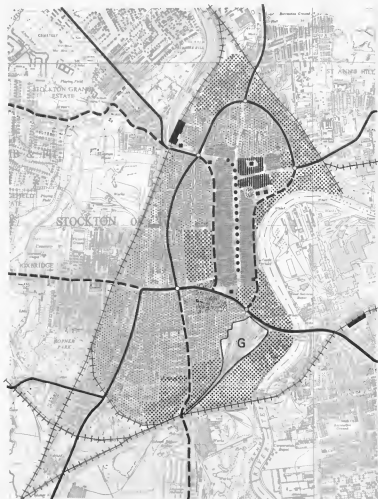


Figure 10.2
CENTRAL STOCKTON
TOWN CENTRE MAP



construction with the rest that would be necessary and the turnover that would be expected.

10.29 This appears, perhaps, to be a relatively small increment of floor space, particularly in the light of the current scheme for the comprehensive redevelopment of the eastern side of the High Street, which now provides for an increment of 125,000 square feet and 66,000 square feet for a department store. Together, these would provide about 190,000 square feet more than is recommended for the first ten years of the development of the whole of the town centre. If this were to be carried forward such that the total provision of floor space in 1991 were to rise to 1,290,000 square feet, it is estimated that, although total retail sales would probably rise, average sales per square foot would fall slightly. They would still lie within the predicted range of sales per square foot, but the rate on the additional 160,000 square feet would be well below the minimum forecast of £24 per square foot.

10.30 In the circumstances, it is strongly recommended that construction of the scheme for the eastern side of the High Street should be phased to give a more gradual increase in total floor space in the town centre. If this is not possible, then any further increases of floor space in the 1980's should be watched carefully to ensure that the total size of the shopping centre is not allowed to increase beyond that recommended for 1991.

10.31 The real problem for Stockton town seems to be that until the last few years it has dominated its hinterland, including much of Billingham and Thorneby, to an extraordinary degree. This cannot continue in view of the committed development in the district centres in those two places that demonstrably will take trade away from Stockton. The current commitments at Billingham and Thorneby cannot be stopped, but it is important to appreciate that the increased status recommended for Middlesbrough is much less important for the future of Stockton than the problem set by these two district centres.

10.32 The decrease in shopping floor space outside the town centre is a consequence of the redevelopment of these areas and the loss of population involved. It is possible that even this amount of floor space predicted for 1991 may be too great, as the forecasts show that turnover per square foot would be below the range for adequate returns on investment.

Transportation

10.33 Finally, the urban structure policy offers guidance on the transportation problem of central Stockton. For the primary road system the policy shows that two urban expressways would be significant for Stockton. One is the proposed realignment of the A66 trunk road, an east-west road passing from Hartburn immediately south of central Stockton, crossing the river Tees on a new bridge, and proceeding past Thorneby. It would connect, by a major intersection south of central Stockton, to the proposed Stockton Motorway, a north-south road from the South Teesside Parkway passing west of the town centre and giving access thereto. These two new roads, and their connections to the town centre, will be required as the number of vehicles attracted to the town centre would rise from 6,000 per day in 1960 to 24,000 in 1991.

10.34 By 1991, it is estimated that about 20 per cent of the person-trips made to the town centre would be by public transport. About 5,000 off-street car parking spaces would therefore be required for private transport.

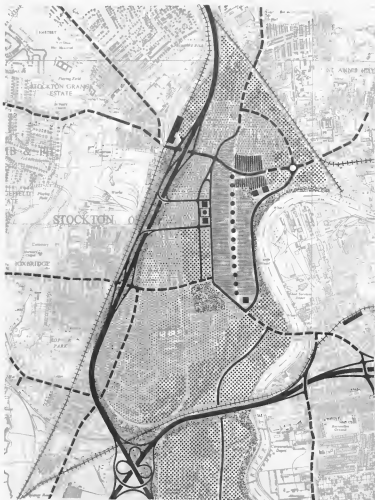
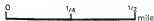
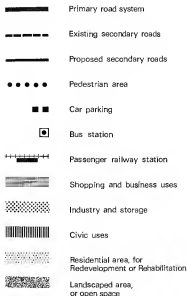


Figure 10.3
CENTRAL STOCKTON
PROPOSALS



The district plan

Land use

10.36 Subject to the above comments on the phasing and quantity of additional shopping floor space, the general land use principles of the approved Town Centre Map are satisfactory and do not need to be changed (see figure 10.3). The only major new recommendation is that the riverside should become an open space feature, integrated with the other land uses and developed for recreation and amenity. The closure of Stockton Quay should make this possible. The location of the eastern relief road and its relationship to the scheme for the east side of the High Street makes it difficult to achieve this at the south end of the High Street but it is most important that the attempt should be made. The task should be easier behind the northern end of the High Street where St Thomas' Churchyard, the Council offices and the new library should form the basis of an architectural composition of buildings and open spaces.

10.36 The following additional proposals are important for the successful completion of the plan:

a the redevelopment of the High Street should be planned so as to afford opportunities for the proper servicing of properties fronting on to the High Street. The process of redevelopment should take the most careful account of the exceptional character and scale of the High Street buildings and spaces:

b shopping and offices should not extend beyond the areas shown for these uses; that is, central area type shopping, with offices over the shops, should be concentrated in the High Street and the immediately adjoining side streets;

c service industry, wholesale distribution and storage should be confined to the areas shown on the Town Centre Map and in the vicinity of the railway station, between the proposed Stockton Motorway and the railway. If possible, the opportunity should be kept open for providing a final alignment for this road which would be closer to the railway, that is through the site of the gas works;

d the redevelopment and rehabilitation of the residential areas should follow the recommendations derived from the housing survey and detailed in chapter 12. In the action area plan for Parkfield, Stockton, Great care should be taken in the detailed design of the redevelopment of the area west of the High Street to recognise the problems posed by the heavy traffic flows generated by the town centre. In particular, the lines of access to the Stockton motorway, probably Wellington and, especially, Dovecote Streets, should be recognised as major traffic routes serving residential areas.

Road system

10.37 The road system for central Stockton put forward in the Town Centre Map must be modified before it can be integrated with the primary road system. Its basic principles were for an eastern relief road, between the High Street and the river; for an inner western relief road along the line of Prince Regent Street; and for an outer western relief road leading north from Bowsfield Lane. The first two of these proposals are both necessary and reasonable and should be implemented with only slight amendments.

10.38 The proposed outer western relief road, however, would need substantial modification. A road that affords access as part of the primary road system is

necessary but the proposed road has certain serious weaknesses. First, it does no more than link a realigned Yarm Lane with Norton Road, north of the High Street, whereas the main theme of the primary road system for Teesside are the realigned A10 between Middlesbrough and Stockton and the realigned A66, the new east-west route. But the outer western relief road in the existing Town Centre Map would be linked to the east-west route only via Bridge Road and Victoria Bridge which would thus impose a severe constraint on the capacity of the road.

10.39 The western relief road should be given a direct connection with the realigned A66. If it has such a connection, and there is no capacity constraint, then the town centre would be fully accessible for the primary road system for Teesside. But the western relief road would then need to be a dual three-lane limited access road capable of carrying 70,000 vehicles per day. A road of this capacity would be a major line of severance, and it should, therefore, pass as close as possible to the other major line of severance, the railway, so that sufficient room would be left for the effective redevelopment or rehabilitation of the remaining residential areas.

10.40 The problem of severance could be further reduced by the closure of Bowesfield Lane and its replacement by a new local distributor road passing from Bridge Road, south east of the main Fieldfield residential area. But, if the future industrial development of the Bowesfield area is not to be impeded, it will need to have an improved road access capable of carrying 11,000 vehicles a day. This could best be done by a continuation of Borthouse Lane passing through Bowesfield, connecting with the Stockton Motorway and Yarm Road.

10.41 The other recommended changes to the road system are those of relatively minor detail at the north and south ends of the High Street and the inner western relief road. That at the south end shows the closure of parts of Bridge Road and Yarm Lane, except possibly for service traffic, and their replacement by a connection

direct from Prince Regent Street to Bridge Road. Before this line is finally accepted in preference to an improvement of the Bridge Road-Yarm Lane intersection, a closer examination should be made of the phasing of the alternative proposals.

10.42 The final road scheme in figure 10.3 shows only the primary and secondary systems and the main pedestrian axis; it does not show the local development roads in the residential areas, nor the local service roads for the shopping area. Car parking would be required for about 5,600 vehicles and locations for these are suggested near the civic precinct and Bridge Road, but mainly in the form of multi-storey car parks along the inner western relief road and as part of development schemes such as that for the eastern side of the High Street.

Conclusions

10.43 The main conclusions in respect of the Stockton central area therefore are, firstly, that the general land use principles of the approved Town Centre Map are satisfactory; secondly, that the road system needs to be modified to adequately integrate the Stockton centre within the main road network for Teesside as a whole; thirdly, that the greatest possible architectural skill should be devoted to the task of redeveloping the High Street, the scheme for which should be designed in close relationship to the rehabilitation of the riverside; and finally and most fundamentally, that this important Stockton shopping centre should be seen to keep its present special status in Teesside by ensuring that the district centres of Billingham and Thornaby do not expand beyond their already committed developments, whilst at the same time Stockton itself should not increase its shopping space at a rate which will prejudice the development of the dominant regional centre at North Middlesbrough. Put another way, the proposed Teesside urban structure policy in regard to the need for a carefully planned and phased regional hierarchy of shopping centres is particularly vital to the future of Stockton central area.



Stockton Town Hall

11 Redcar central area

Summary

a Redcar is to continue as a district centre serving eastern Teesside by expansion and redevelopment of its central area.

b The High Street should be made into a pedestrian precinct and redevelopment between it and the Esplanade should provide for easy access between the two, and views of the sea.

c There should not be any major expansion of recreation facilities on the Esplanade if it leads to an increase in the forecast amount of traffic.

d A connection to the primary road system should be made by the construction of a road from A1085 to A1042 passing north of the railway.

Existing conditions

11.1 Redcar is a rapidly growing town on the coast, south of the Tees estuary, with a 1966 population of around 34,000. In addition to serving as an important dormitory for employees of Middlesbrough and the heavy industries of the lower river, it is a seaside recreation centre, relying mainly on day trippers and evening visitors from the rest of the Teesside urban area. The central area is an important district centre serving the eastern part of Teesside and Cleveland. The shopping centre, focused on the High Street, is just off the sea front, and the residential areas spread in a semi-circle to the south, the most recent suburbs being on the extremities.

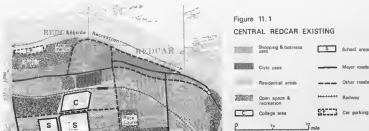
Land use

11.2 The central area, with the High Street at its heart, is triangular in shape (see figure 11.1). It is

bounded on the west by the area of substantial residential properties and civic uses west of Station Road; on the south by the Saltburn railway and the modern residential properties south of Dobson Terrace; and on the north by the sea. The whole area is flat, the only significant change of level being at the sea wall.

11.3 The main shopping area extends along either side of the High Street between Station Road and Redcar Lane, the major shops being located in the narrowest part of the street, east of the Town Clock, and in 1966 it contained about 230,000 square feet of gross shopping floor space. Some of the heritage comprises purpose-built shop units of recent construction, including two important redevelopments just completed, the majority of these new premises being in the narrow section of the street, and occupied by the national multiple stores. Most of the premises, however, are in old buildings, including many converted dwellings, some in poor physical condition and many unsuited for modern retailing. Redevelopment has been undertaken in recent years at a gathering pace, and this is likely to continue in future, though there are no major outstanding proposals at present. It is important that any physical plan for the centre should provide a framework for this process to continue and for the new shops to be laid out to modern standards with adequate servicing, pedestrians and vehicles being segregated. By virtue of the investment in it, High Street is likely to remain the core of the shopping centre for the foreseeable future.

11.4 High Street has considerable visual charm, based on its interesting building lines and the pleasant character of its mainly nineteenth century buildings and it is very desirable that this quality should be retained. A particular attraction of the street is its close juxtaposition to the seafront, the series of short side streets



providing both easy access to the front and good views of the sea. It is important that these views should be retained in any redevelopment proposals. The centre lacks any vertical feature, most of the buildings being of only two storeys, on a flat site. If carefully designed and well planned, one or two vertical features might make a considerable contribution to the visual quality of the centre.

11.5 North of the main shopping centre, the narrow strip of land between the back of the High Street shops and the Esplanade is occupied mainly by seafarers' entertainments, though several of the larger stores on the High Street also have a frontage on the Esplanade. This area stretches from West Terrace in the west to Cleander Street in the east, the depth of properties varying from about 300 feet in the west to 50 feet in the east. On the sea front side of the Esplanade are amusement arcades and cafes which serve the seasonal beach trade and some of which close in the winter. These enterprises are housed in a variety of buildings, often former one-storey dwellings, many being poor in condition and appearance, and with a complex mixture of ownerships. If Redcar is to retain, let alone enhance, its attraction to visitors, action is needed to improve this sea front area. The integration and interrelation between the Esplanade and the High Street affords a splendid opportunity for imaginative comprehensive development of sea front and shopping centre.

11.6 The other areas abutting on the shopping centre contain a mixture of local and other shops, a few small warehouses, motor workshops, and clubs. But except in Lord Street, Station Road and West Dyke Road, the predominant use is housing. Most of the buildings are terrace houses in poor condition, which suffer nuisance from the other uses, particularly service traffic, and from the overflow of car parking caused by the proximity of the shopping centre and the sea front.

11.7 Northwest of the High Street, west of Station Road and north of Coatham Road, is an area of substantial late Victorian terrace houses. Some are used as boarding houses and, at the rear of others, old stables are used for small workshops, storage and a Corporation depot. This area is in need of rehabilitation and environmental improvement, but as most of the buildings are above average size and structurally sound, they are likely to remain for the foreseeable future. Southwest of the High Street area, south of Coatham Road, is a well defined civic and administrative area. The present buildings are converted Victorian houses, but a large new library to serve Redcar is planned. It is likely that the area will continue to be needed for civic purposes after Redcar becomes part of Teesside County Borough.

11.8 South of the High Street, between Station Road and Redcar Lane, is an area at present mainly residential use. There are old terrace houses, smaller than those northwest of the centre, generally in poorer physical condition and lacking in basic facilities. To the west of Red Lane Street there is a considerable development of storage uses, motor workshops and so on, mostly housed in buildings in a poor structural state. The most recent change has been the construction of a new depot for United Automobile Services Ltd, adjacent to the railway station. Within this area the residential properties suffer from juxtaposition with the other uses, the overall quality of the environment being very low. Further east the residential area is less broken up by service uses but, like the area to the west, the condition of the buildings and their environment is poor.

11.9 East of Redcar Lane and south of Lord Street is a small area of mixed uses, including church and school, a municipal car park and old terrace houses, most of the buildings being in poor physical condition. To the south of Dobson Terrace is an area of more recent residential development, where little change is likely in the foreseeable future.

Communications

11.10 The main Darlington to Saltburn railway passes south of the central area. This is an important line for passenger traffic but it acts as a major line of severance, at Redcar, confining central area activities between the railway and the sea. A serious disadvantage is that the only road access to the central area from the south is by level crossings on West Dyke Road and Redcar Lane. This should be rectified.

11.11 Apart from their local function, the roads in north Redcar mainly serve traffic between Saltburn and Middlesbrough and the industries of the lower Tees. The main east-to-west route, A1042, follows Coatham Road and the High Street through to Coast Road, while secondary east-to-west routes follow Newwomen Terrace and the Esplanade, on the north, and Lord Street on the south. The main north-to-south roads within central Redcar, bringing traffic from the residential areas to the south into the centre, are West Dyke Road and Redcar Lane, which link to the west and east ends of the High Street respectively. The High Street has a key position in this system.

11.12 The main characteristics of the system of main roads are that, except over short distances, they are of only two-lane width, their alignment is often poor, and there are a great many junctions which create traffic problems. The worst is at the west end of the High Street, where the main road makes two right angle bends to enter it and is joined there by traffic on the important West Dyke Road. There are all multi-purpose roads, providing facilities for through traffic, the servicing of adjoining properties and car parking.

11.13 At present it appears that serious congestion due to overcrowding of the roads in Redcar centre is infrequent, the worst conditions obtaining on sunny Sundays in summer, when peak shopping traffic coincides with sizable volumes of pleasure traffic to the seashore. The worst congestion occurs at the junctions at the west end of the High Street.

11.14 The majority of the available car parking spaces are on-street; the most important areas in terms of capacity being the Esplanade and High Street East, where parking in ranks is permitted. There is one sizable off-street car park, at Lord Street East. This space is adequate for most of the year. On the rare occasions that all the available spaces in the main streets are occupied, parking spills over into surrounding residential streets. The narrower streets like Lord Street and West Dyke Road, with only two available traffic lanes, are sometimes blocked by parked cars. A further problem is that restrictions on parking in the main streets lead to further parking in surrounding residential streets.

11.15 Most of the shops and premises on the north side of the High Street are serviced from it and this causes some traffic congestion in the narrow middle section of the street. There are few side streets or rear alleys adequate to permit servicing away from High Street. The position is rather different on the south side where Lord Street already serves as a rear service road, and could be fully developed as such in future.

11.16 It is clear that the present system of provision for movement of pedestrians and vehicles is inadequate. The situation is not yet out of hand, but car ownership and usage increase in future, and if commercial development continues in the area, a rationalisation of the system will be required. This will involve the development of a hierarchy of routes, from main roads to service roads, and pedestrianisation of parts, at least, of the High Street.

Current planning proposals and urban structure policy

11.17 There are no present major proposals for development or redevelopment in the central area. A draft Town Centre Map was prepared in 1983 but has not been finally approved. Its main proposal was that High Street between Station Road and Moor Street should become a pedestrian precinct by the construction of a new road from Cothens Road, bypassing the shopping centre on the south, and rejoining High Street at Moor Street. Subsequently, a report prepared by Development Analysts Ltd, estimated that shopping floor space in the centre should be increased to 400,000 square feet.

11.18 The urban structure policy for Teasdale, described in chapter 5, envisages no change in the function or status of Redcar centre though the population of its hinterland is expected to increase because of commitments and proposals mainly affecting Middlesbrough. The main specific policies affecting Redcar centre are:

a the shopping floor space in the centre could be increased from its present quantity of about 233,000 square feet to 400,000 square feet by redevelopment and new construction. Even with the provision for additional shopping elsewhere in its hinterland, this would result in a turnover of about £26 per square foot by 1991 which would probably make the centre an economic success;

b facilities for recreation should continue to be provided at Redcar, subject to the comments on scale and location made later in this chapter;

c as a consequence of these policies, employment in the centre is likely to double, rising from 3,300 in 1986 to 6,600 by 1991, the increase being entirely in service employment;

d the population of the immediate environs of the town centre is likely to fall from 4,000 to 2,000 as a consequence of redevelopment and rehabilitation of housing and expansion of the central area;

e High Street should be made into a pedestrian area by the construction of an alternative road joining the

trunk road (A1066) with the Coast Road (A1042) by a route roughly parallel to and north of the railway.

Local planning policy

11.19 The planning proposals shown on figure 11.2 give a broad framework for the guidance of development. They are not intended as a set of precisely defined land use allocations or road alignments.

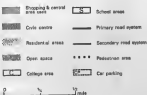
11.20 The shopping centre should be concentrated in the area between Lord Street, Station Road, Redcar Lane and the Esplanade, though the core of the centre should remain west of Moor Street on the High Street and the Esplanade. The western end of High Street should be made into a pedestrian precinct with service access from Lord Street and, at limited times of the day, from the Esplanade. This core would be sufficient to accommodate the increased floor space in the town centre, mainly north of the High Street. Additional shopping should not be located south of Lord Street, where car parking is a preferable use.

11.21 The recreation activities, mainly for day visitors during the summer season, are located on the Esplanade and between the Esplanade and the High Street. They are intermingled with shopping. The first priority in redeveloping this area between Moor Street and West Terrace should go to the needs of shopping and services, the policy already being implemented in recent schemes. But the principle of north-south alleyways and a mixture of uses between the High Street and the Esplanade should be retained.

11.22 The major proposal for the circulation system is for the construction of a new east-west road having a capacity of up to 25,000 vehicles per day by 1991, that is a dual two-lane road for which grade separation would not be necessary. Fairly heavy flows, of the order of 16,000 vehicles per day could also be expected along Redcar Lane. Otherwise the existing road system would in general be satisfactory, modified only to provide the pedestrian system and service roads for the town centre.

11.23 If these improvements are made, then the total number of vehicles attracted to the town centre would be about 10,000 a day in 1991. This would require car parking space for 2,600 cars, located mainly between Lord Street and the new road, on cleared housing sites. The area shown on figure 11.2 would be required if the car parks were surface level. If multi-storey car parks were provided, the remaining land on this site would be used mainly for service industries and storage.

Figure 11.2
CENTRAL REDCAR: 1991



11.34 The basic policy recommendation is that central Redcar should primarily be a district centre serving the east of Teesside. Recreation facilities should continue to be provided on the Esplanade and their appearance and quality should be raised as redevelopment continues. It would be unwise, however, for there to be any substantial increases to the recreation facilities because of the shortage of land, particularly for car parking, and

the problems of traffic circulation. If further study shows that extra recreation facilities should be developed in this location, the future pattern of circulation and car parking would have to be re-examined and a choice made between shopping and recreation. However, it is likely that the best location for intensive development of recreation might lie further along the coast between Redcar and Saltburn.



Redcar High Street

12 Housing rehabilitation, action area plans

Summary

a Parkfield, Stockton and Southfield, Middlesbrough are taken to illustrate the application of the general policy recommended from the Survey of Housing and Environmental Deficiency (S.H.E.D.) to specific areas. It is suggested that although their priority for treatment is relatively low, they would be worth considering as pilot studies for implementation to illustrate the potential of area rehabilitation for improving the environment of housing areas.

b The scheme for Parkfield covers 2,340 dwellings, providing for the clearance of 1,260, the redevelopment of 710, and the rehabilitation of 1,080 dwellings in a phased programme. The scheme suggests the following:

- (i) through traffic be excluded from the area;
- (ii) a local centre be created, comprising primary schools, shops and community buildings;
- (iii) this centre to be on a main pedestrian route joining Queen's Park, the centre, the main existing open space (a churchyard) and Stockton town centre;
- (iv) the area east and south of the centre would mainly be redeveloped, the further west being capable of rehabilitation.

c The scheme for Southfield is simpler, as befits a more homogeneous area. It covers 1,540 dwellings virtually all of which are capable of rehabilitation in terms of their structure. Nevertheless, up to a third should be demolished to provide for off-street car parking and open spaces. In addition, circulation in the area should be reorganised to separate different grades of vehicular traffic and pedestrians; and a local centre should be established.

The rehabilitation of housing areas

12.1 A major element in the decaying urban fabric of Teesside is that of housing; firstly, because of the sheer extent of land which this housing occupies and, secondly, because of the profound social, physical and economic problems which it now presents.

12.2 The basic need to replenish housing stock by a combination of clearance and redevelopment on the one hand and rehabilitation on the other is now accepted by Government as a national, rather than a merely local problem. Nevertheless the greatest need lies in the industrial north of the country and it is important, therefore, that some priority of investment should be granted to these areas, of which Teesside is unquestionably one. One aspect of the problem characteristic of Teesside is the extent to which housing obsolescence is comprised of the smaller action type of dwellings. There is only a very small percentage of the more spacious and characteristic kinds of villa type terraces in the whole area.

12.3 Because of the fundamental importance of housing renewal in the revitalisation and expansion of Teesside a big effort was made in the survey of housing and environmental deficiency (S.H.E.D.) to get to the heart of the matter; to examine its extent in social, physical and economic terms and to establish some basic criteria for deciding the circumstances in which clearance and redevelopment, or rehabilitation, is the more appropriate solution. The essential need to work out sound criteria for this purpose will hardly be questioned and the economic background to their establishment is described in chapter 3, paragraph 3.33.

12.4 The two areas selected to illustrate the application of S.H.E.D. principles and policies to action in the field have been carefully chosen as being, together, typical of much of the obsolescing housing in the heart of Teesside. Both have good basic environmental potential within the context of the urban structure policy for Teesside in that they are, and will remain, near to major public open spaces, to central or local shopping, to schools and to public transport services linking them with employment areas. In other words, by improvements to the individual dwellings and to their immediate environment not only can they be woven into the renewed urban fabric but they will bear comparison with the more recent residential development on virgin sites.

12.5 It should be appreciated at the outset that the preparation of a physical plan and cost for structural and environmental improvement, and even the working out of the S.H.E.D. criteria, are but the first and perhaps least taxing of the efforts which are needed to get this vital machinery of housing rehabilitation into effective physical action on the site. The quasi-political processes are sufficiently arduous to daunt all except those who are determined to show what a combination of idealism and practicality, of skill and endeavour, can achieve in the transformation, fairly quickly, of hundreds of acres of obsolescing housing in Teesside.

12.6 Because of the importance of the problems involved outside the technical field reference is made to certain points, a consideration of which may assist in the task of implementation. Suggestions covering some of these points and proposals for higher grants for the improvement of dwellings and for the rehabilitation of the environment of housing areas have recently been made in a White Paper, *Old Houses into New Homes* (Cmd. 3802, 1968).

a Successful implementation depends largely on the preparation by the local authority of a well-mounted public relations exercise for the area selected for rehabilitation.

b Publicity should aim first at making clear to

occupiers, landlords, estate agents and building societies that the area is declared an improvement or rehabilitation area; that improvement will be assisted by local authority and Government; and that it is expected to have a life of a specified number of years.

c Rehabilitation should be a combination of local authority and voluntary effort. Compulsory powers should nevertheless be held in the background, to ensure that delays are avoided.

d The private landlord might be encouraged to participate in improvements by changes in rental policy, by increased grants or loans and by grants for repairs.

e Neither the capital nor manpower is available for the local authority to buy up and improve all deficient property. Therefore other sectors, such as housing associations, should be encouraged to participate.

f Building societies should be encouraged to give higher mortgages for house purchase in areas designated for rehabilitation.

g There is much to be said for the local authority concentrating in improving the environment and thus giving confidence and incentive for the private improvement of the houses within it. In this way the authority provides a framework within which the benefits of improvements made by individual property owners can be made to accrue to the whole neighbourhood.

h The nature of the work involved and its allocation between public and private responsibility is likely to be as follows:

(i) *Local authority* (possibly with Government grants). Modifications to and improvement of roads and foot-

paths including segregation of pedestrians and vehicles, provision of parking spaces, children's play spaces and landscaping. Provision of open spaces. Clearance and redevelopment of housing. Provision of schools and local shopping. Payment of improvement grants. General initiation and co-ordination of rehabilitation programme.

(ii) *private sector* (assisted by grants from local authority and Government). Improvement of all dwellings not publicly owned. Co-operation with local authority in forwarding the aims of the rehabilitation policy and programme.

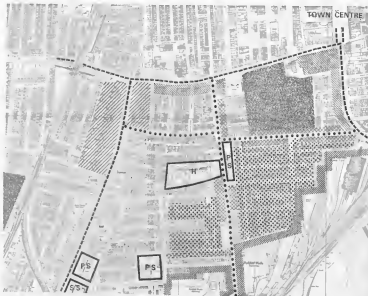
12.7 There is a considerable body of existing legislation, studies and reports that are relevant to the problem of rehabilitation. They include:

a *Existing legislation*

(i) *Housing Act 1957*—enables local housing authorities to deal with dwellings that are unfit for human habitation.

(ii) *Housing (Financial Provisions) Act 1958*—(a) enables authorities to exercise their discretion to make grants to private owners for improvement or conversion to a fairly high standard, and for the Exchequer to make contributions in respect of the improvement and conversion of council houses, and houses owned by housing associations; (b) the Exchequer may make contributions to authorities who, of necessity, must retain and patch unfit houses they have acquired for future demolition.

(iii) *House Purchase and Housing Act 1955*—authorities are put under obligation to pay a standard grant to owners towards the cost of providing a house with



cases into amenities. Eschequer contributions may be made to authorities carrying out similar work to their own houses.

(iv) *Housing Act 1961*—power to apply management codes to houses in multiple occupation and to require works to raise standards of occupation.

(v) *Housing Act 1966*—confers powers on local authorities to compel the carrying out of works for the improvement of dwellings.

(vi) *Housing Subsidies Act 1967*—introduced a subsidy based on the combined costs of acquisition and conversion or improvement to housing associations buying and modernising houses by arrangements with local authorities.

b. Housing studies

(i) *The Deeplyth Study*

This was carried out by an interdisciplinary team of officers of the Ministry of Housing and Local Government in an old area of Rochdale, a district of about 150 acres with 1,600 houses, mostly in late Victorian red brick terraces. It is a typical example of many parts of our old industrial towns and the examination of social and physical living conditions in the area has yielded results which could be of general application. The main conclusion was that, since the area might not be redeveloped for more than twenty years, it was worth a deliberate effort to improve the houses and their environment. The inhabitants of Deeplyth had a pride in their homes and district, with its easy access to the main shopping and working areas, and were a recognisable and articulate community. The local authority have taken up one of the Report's recommendations by going ahead with a small pilot scheme for environmental improvement.

(ii) *Helwell Report*

This was a study for the redevelopment of an urban twilight area of Bolton prepared by Hellmuth Obata Kassabaum Ltd., at the invitation of a former Minister of Housing & Local Government. The company concluded that the principal agency in an operation of this magnitude must be the local authority since the prospect was not attractive enough for private enterprise to bear the cost of such redevelopment even if land was available free of charge. The inevitable problems of overspill of population when such areas were redeveloped went beyond the scope of private enterprise. A comprehensive partnership of resources and skills of national Government, local authorities and private enterprise would be needed.

(iii) *Our Older Homes—a call for action*

This report was produced by a sub-committee of the Central Housing Advisory Committee under the chairmanship of Mrs. Evelyn Derington. The report emphasized the need for a comprehensive approach to the problems presented by older houses and for a coherent pattern of standards. The stress was laid on a satisfactory house as a satisfactory environment as a minimum standard and a call was made for the channelling of national resources to clear the slums in the worst affected areas on the grounds that the job was too big for local resources to tackle in a reasonable time. There was considerable scope for further research upon the comparative economics of improvement and new building. The committee also recommended a revision of the minimum standards of housing fitness and introduced the new concept of environment in the standards for satisfactory housing. More comprehensive and better information about the condition of the nation's housing stock was also required and powers should be given to local authorities to enforce a maintenance standard for houses.

(iv) *Scotland's Older Houses*

This was produced by a sub-committee of the Scottish Housing Advisory Committee under the chairmanship of Mr. J. B. Cullingworth. As in the English counterpart, *Our Older Homes*, the report emphasized the need for a comprehensive approach to the older houses problem and the need for a more coherent pattern of standards but went wider in its general recommendations on the problem. It called for the channelling of national resources into areas with the worst slum problems especially to Glasgow, and recommended a target to be set for the clearance of all slums, with a policy of improvement of dwellings that cannot be cleared in this period, with a target for improvements similar to slum clearance targets. More information about the housing stock should be obtained by means of surveys and studies particularly of the rural problem. Suggestions were made for the review of the financing of the clearance and improvement programmes, and also for the revision of the minimum tolerable housing standards and reorganisation of local authority departments responsible for all housing matters.

12.9 It is felt to be important that certain areas of rehabilitation should be pressed forward with urgency as pilot schemes in order to demonstrate the benefits which can result and so that lessons may be learnt for application to the remaining areas. These would seem to be logic in selecting either or both of the Action Areas described here for this role and ignoring the specific priorities and dates for recommended action in order that the fullest advantage might be taken of the work already done. By speedy and effective action, Tenaside could become the country's pioneer in this vitally important sphere of housing rehabilitation.

Parkfield action area, Stockton

Existing conditions

12.9 Parkfield lies adjacent to and southwest of Stockton central area. It is bounded by Yarn Lane on the north; Bridge Road and South Stockton Goods Yard (British Rail) on the east; and by railway line on the west and south. The area is thus effectively segregated from neighbouring housing and other land use (see figure 12.1).

12.10 The site is fairly flat, the steeper falls being in the land lying to the east of Bowsfield Lane. Housing is the predominant land use, the type and condition varying considerably throughout the area. The worst housing lies at the north-east and of the site with a gradual improvement towards the western and southern boundaries. At the northern end of Yarn Road and along Yarn Lane, land has been turned over to office and commercial use. Yarn Lane itself consists with the southern end of the main High Street shopping area.

12.11 Of other non-residential land use in Parkfield, the most significant is the band of industrial development on the southern edge of the site (slag immediately to the north of the Salbute to Derlington railway line. This industry is at the northernmost tip of the Bowsfield industrial area. With no alternative means of vehicular access available at the present time, traffic to Bowsfield cuts through the Parkfield housing area along Parliament Street and Bowsfield Lane. Together with inadequate car parking arrangements for the industrial group north of the railway line, the density of goods traffic movement presents a considerable hazard and nuisance in Parkfield.

12.12 The traffic situation is further aggravated by the



existence of major traffic routes cutting through the area. Yarm Road and Harbourn Lane are 'A' class routes carrying considerable volumes of traffic and will remain as local secondary routes within the proposed urban structure. Parliament Street and Westbourne Street are used at the present time as a diversionary route for west and south-bound traffic crossing the river Tees at Victoria Bridge. This route relieves the already congested junction at Yarm Lane and High Street. Heavy through traffic on this diversionary route does cause nuisance and danger to Parkfield residents and an alternative traffic solution is an urgent requirement.

12.13 Insufficient off-street car parking space has caused the narrow streets of Parkfield to be used for casual and long term parking and the situation could become increasingly aggravated in housing areas on the periphery of the industrial area due to an overspill of cars from the industries.

12.14 Shopping facilities are concentrated on Parliament Street and Bowesfield Lane. Both are busy traffic routes and present a hazard to pedestrian and motorist alike. Corner shops are scattered in the older housing areas.

12.15 Several school sites lie within the boundaries of the area. With the exception of one private school for girls, all are designated as primary schools for the immediate future and closure has been determined for the older sites with aged buildings and inadequate play space. St. Cuthbert's Roman Catholic primary school requires a new site immediately. The Richard Hind School alongside Yarm Road will require to be replaced within the next twenty years and a more central and traffic-free location should be sought for the school and attendant playing fields. The Stockton & Thorneby Hospital on Bowesfield Lane is due to be closed within the next fifteen years.

12.16 There is no public open space within Parkfield and no play space for the children. The nearest open spaces are the grassed Holy Trinity Churchyard on the northwestern corner of the site and Roper Park on the western side of the Hartlepool to Darlington railway line. Children are allowed to play on the churchyard site and this space is a valuable asset to the Parkfield residents. Access to Roper Park is rendered difficult by the barrier created by the railway line. Only one crossing of the line to the park exists by footbridge from Spring Street.

12.17 One attractive feature of the area is the group of substantial commercial and residential properties flanking the northern end of Yarm Road. Trees line the roadside and if care was taken to properly landscape the frontages along Yarm Road and to improve access and

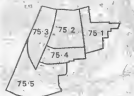


Figure 12.2
PARKFIELD ENVIRONMENTAL AREA

car parking arrangements, much could be done to enhance this part of the site.

12.18 A less desirable feature is the Parkfield Foundry in the industrial belt on the southern edge of the site. Vibration and atmospheric pollution from the foundry causes a nuisance to the adjacent housing areas. Land immediately adjacent to the foundry should not be redeveloped for housing.

S.H.E.D. and the condition of housing

12.19 Parkfield was listed in S.H.E.D. as environmental area 76 (see figure 12.2). The results given by the survey are in table 12.1. The general recommendation from S.H.E.D. is that Parkfield should be renewed by the rehabilitation of its dwellings and environment but that the northeastern part of the area has deteriorated to the point at which clearance and redevelopment become the only acceptable course of action. It is important to realise, however, that the S.H.E.D. figures are only a general guide to action based on a sample survey of one in fifteen of the dwellings on Teesside. The figures should not be regarded as precise and unalterable.

12.20 The field survey of Parkfield endorsed the findings of S.H.E.D. as to the general deterioration in housing and environmental quality from south to north, and from west to east. Main causes of environmental deterioration were found to be the penetration of the area by through traffic along Parliament-West-

Table 12.1. S.H.E.D. data, Parkfield environmental area

area number	75.1	75.2	75.3	75.4	75.5	TOTAL
S.H.E.D. score, priority points	63.8	36.0	38.8	38.5	26.1	-
priority for action	1	3	3	3	3	-
date for action	1967-8	1976-7	1975-6	1976-7	1982-3	-
number of dwellings:						
before action	640	880	415	430	240	2,350
after action	430	380	330	340	270	1,750
to be cleared	80	210	180	210	60	1,220
to be replaced	420	0	80	120	0	620
to be rehabilitated	10	380	235	220	270	1,135
average cost per dwelling of rehabilitation	£790	£840	£810	£750	£620	-

Notes: dates for action are strictly according to the priority for Teesside as a whole, defined in chapter 3, paragraph 3.43. The selection of Parkfield as a pilot study for earlier implementation is a separate issue.

The number of dwellings to be rehabilitated and the average cost of rehabilitation are indicative of the scale of rehabilitation work on the dwelling and its environment, not only the dwelling itself.



Figure 12.3
PARKFIELD ACTION
AREA: LAND USE



Bourne Street, creating decay along these streets and between the latter and Yarn Lane; and along Bowesfield Lane, a means of access to the Bowesfield industrial area.

12.21 Discussions with the local authority revealed:

a the programme of slum clearance reflected the findings of S.H.E.D. In general, though the boundaries of areas were more sharply defined. Clearance orders are currently being made for the land south of Blakeneth Street and east of Bowesfield Lane; and later clearance was expected between St. Cuthbert's Road and Bowesfield Lane, south of Northcote Street;

b about 280 Improvement Grants have been made in the area with particular concentrations around Alliance Street and Wilton Street where the noticeable improvement reflects local initiative.

Design principles

12.22 The urban structure policy for Teesside given in chapter 6, and the district plan described in chapter 10, gave clear indications about the planning framework for Parkfield. In particular it demonstrated that the effects of creating a primary road system would be to make possible the diversion of through traffic from the Parkfield environmental area. This would be a consequence mainly of the construction of the Thornaby bypass with its connections to Yarn Road; the proposed longer term Stockton Motorway connecting the South Teesside Parkway to Stockton; and making Bowesfield Lane the main means of access to the Bowesfield industrial area.

12.23 The design principles to be applied to Parkfield itself are:

- a the establishment of an overall plan for the area which can be duly completed phase by phase;
- b the phased plan to be in accordance with the availability of financial resources and the priorities for action in the Teesside Borough;
- c the provision of a network of vehicular and pedestrian routes designed to provide separation between pedestrians and vehicles;
- d the elimination from residential areas of uses that reduce environmental quality;
- e the establishment of a coherent pattern of community facilities serving the residential areas.

Action area proposals

12.24 A scheme for the redevelopment and rehabilitation of Parkfield is illustrated in figures 12.3, 12.4 and 12.5. It provides for the following action in five phases (see table 12.2).

12.25 *Phase 1, 1967-70:* Action during the first phase will be concentrated in zone 75.1, with the completion of a programme of clearance of sub-standard housing already being carried out by Stockton Borough Council. It is recommended that peripheral areas of housing should also be cleared in this area to make way for housing redevelopment and the creation of a school site.

12.26 One great defect in the present traffic management system is the diversion of southbound traffic

Table 12.1. Housing proposals, Parkfield (dwellings)

phase	I	II	III	IV	V	TOTAL
to be cleared	810	130	470	40	200	1,250
to be redeveloped	180	280	260	0	0	710
to be rehabilitated	0	0	770	310	0	1,080

between Bridge Road and Yarm Road, causing congestion and nuisance along Parliament Street and Westbourne Street. A policy for the correction of the defect would commence by the establishment of a southern peripheral route to the housing area for traffic approaching the industrial area on the southern boundary. At present most traffic to and from the industrial area passes through the residential area. It is proposed to reduce this by re-directing access to parking in the industrial area via Boathouse Lane, south of the railway, with the ultimate intention of all traffic to the industrial area approaching from the south.

12.27 A new site is required for the St. Cuthbert's Roman Catholic primary school and the local authority proposed to lease it south of the Richard Hind School on land over which the proposed Stockton Motorway will pass. As the need is urgent, it is recommended that a site be provided within zone 75.1 on land which is at present largely clear. The present Roman Catholic school site would then be cleared to provide open space for children's play.

12.28 Redevelopment in urban areas of this character and location should be at a maximum net density of about 100 persons per acre. A mixed form of develop-

ment at about this density has been suggested for Parkfield and is shown in figure 12.3; low rise housing predominates with peripheral areas of three-storey maisonettes.

12.29 Car parking and garaging has been located close to access points on the distributor road leaving the inner housing areas free from vehicles. Local pedestrian routes are linked to a central pedestrian spine route designed to pass through the centre of Parkfield giving access to the town centre and Roper Park.

12.30 Probably in the first phase, the inner western relief road to the town centre would be completed by the construction of a new road from Prince Regent Street to Bridge Road. This would define the northeastern boundary of the Parkfield environmental area, with housing and open space on the southwest, and central area care on the northeast side. The pedestrian spine route would give access to the town centre across this road, and via Park Terrace.

12.31 Major road works should take place in the Alliance Street area in Phase V (1980-82). As much improvement work has been carried out in this area, it is recommended that with an expectation of about

Figure 12.4
PARKFIELD ACTION AREA,
CIRCULATION



Figure 12.5
PARKFIELD ACTION
AREA / PHASING

- 1 1967-1970
- 2 1970-1973
- 3 1973-1975
- 4 1975-1978
- 5 1978-1980

Redevelopment area
0 250 500 750 feet

fifteen years further life, further improvement work be encouraged, but only during this first phase.

12.32 Phase II, 1970-73: With the completion of the Thornaby bypass across the Tees, traffic on the Bridge Road-Parliament Street diversion will be much reduced and thus Parliament Street could be closed to traffic to provide for the construction of the remainder of the redevelopment in zone 75.1.

12.33 Phase III, 1975-77: This period covers intense activity on rehabilitation in the area, with action taking place in zones 75.2 and 75.4. Further clearance and consequent redevelopment should take place on a major area south of Northcote Street, which becomes the pedestrian spine route. The peripheral distributor road will continue from Bowesfield Lane through to Grove Street.

12.34 Car parking and ganging is located as close as possible to the distributor roads and away from internal housing areas. Play streets are introduced by developing a system of alternate vehicular and pedestrian terminal routes.

12.35 Following the closing of Parliament Street, it is intended that further through traffic in the area be discouraged by cutting off Bowesfield Lane at the junction with Northcote Street which would then form part of the main pedestrian spine route.

12.36 Clearance in the area around Stockton & Thornaby Hospital will be carried out to provide a site for shopping in a newly formed neighbourhood centre in the heart of the environmental area.

12.37 Action will also take place in zone 75.3 on the frontage development to Yarm Road, with the intention of reducing the number of vehicular lanes on this section of road; providing additional car parking to the commercial buildings; and encouraging the creation of a properly landscaped and planted 'buffer' strip between the main road and the frontage development.

12.38 As the volume of traffic on Yarm Road will inevitably have increased by this time an underpass should be constructed for pedestrians crossing that road from one section of the main spine footpath to the other.

12.39 Phase IV, 1977-78: Clearance will take place in zone 75.5, east of Yarm Road, to make way for a temporary road connection between the resigned A66 and Yarm Road.

12.40 As the Richard Hind School will by this date have come to the end of its useful life and be adjacent to major road works, it is proposed to re-site the school and its playing fields adjacent to the Parkfield neighbourhood centre. This will have to be programmed in relation to the clearance of the Stockton and Thornaby Hospital which by that date should also have been replaced.

12.41 The cleared site of the present Richard Hind School will provide land in Yarm Road for parking, garage areas and play space, for the housing north of the railway in zone 75.5.

12.42 The remaining housing south of the railway in zone 75.5 will be rehabilitated, action being mainly concentrated on the environment with the provision of

parking and play areas and the improvement and landscaping of the derelict land adjacent to the railway, together with the new road works.

12.43 *Phase V, 1980-82:* Action within this phase will take place in zones 75.3 and 75.5 and will consist of the clearance of housing to provide land for the route of the proposed north-south primary road for the Stockton central area.

12.44 Completion of rehabilitation works to the remaining housing in zone 75.3 will be carried out consisting mainly of the provision of a traffic segregated system together with further garaging and parking.

12.45 As noted in Phase I, housing in the Alliance Street area is likely to be demolished some fifteen years after the completion of a programme of improvement to the dwellings, action on the environment having been withheld.

12.46 *Further long term action:* The pattern established by the end of the action period in 1982 has been designed to be easily adapted when areas become due for further action, probably clearance, after the turn of the century. Further pedestrian and vehicular systems could follow the broad pattern set down during the period of action and could extend into adjacent areas. The industrial area between Parkfield and the river Tees could be reclaimed and redeveloped for residential use related to the riverside and linked to the Parkfield pedestrian spine route by footpaths.

Southfield action area, Middlesbrough

Existing conditions

12.47 The second area selected to illustrate the application of the policies arising from S.H.E.D. to a specific part of Teesside is that around Southfield Road, North Middlesbrough, which lies immediately to the north of Albert Park and adjoins the eastern boundary of the proposed site for the Polytechnic (see figure 12.8).

12.48 Southfield comprises 1,540 dwellings on 65 acres of land. The area is bounded by Woodlands Road on the west, Borough Road on the north, Marton and Park Vale Roads on the east and Park Lane on the south. Unlike Parkfield, Southfield has a pronounced homogeneous character and is little penetrated by through traffic.

12.49 The site is flat and has not been effected by any major changes either in land use or character since its development in the early part of the century. Though new uses are beginning to be introduced within the area, mainly on the northern fringe, the area remains predominantly residential. The housing is of a consistent quality comprising a limited number of house types. The layout is of a grid-iron pattern and the invariability of housing development is such that very little open space is available and no provision has been made for off-street car parking.

12.50 The shopping pattern is of corner shops scattered throughout the site. A nucleus of shops in the Victoria





Figure 12.7
SOUTHFIELD ACTION
AREA: LAND USE



Road, Waterloo Road and Abingdon Road area gives evidence of a fairly flourishing trade in comparison with other groups of shops closer to the main Lanthorne Road shopping centre.

12.51 There are no schools within Southfield; it is served by two primary schools at Victoria Road on the western boundary and Marton Road on the eastern.

12.52 Though Albert Park is close to the site, a barrier formed by the private grounds of the Maternity Home, Nurses' Home and Nazareth House Orphanage and the crossing of a major road (Park Road North), has led to the effective separation of the Park from the site. In addition, though the grounds of the Maternity Home and Children's Hospital are attractive, a nine-foot high wall divides these buildings and grounds from the residential area. Thus the mature landscape, though close, provides no relief from the rigid grid-line pattern of the residential development.

12.53 There are no play spaces or play streets either within the site area or within easy access. The only visual relief from the monotony of the area is the wider tree-lined streets of Woodlands and Southfield Roads.

12.54 An essential factor in determining a balanced and economical plan for the area was to examine the work that has already been carried out on dwellings within the action area in the form of Improvement grant work. About 250 grants have been made, mainly for houses in Falmouth, Enrol and Maple Streets.

S.H.E.D. and the condition of housing

12.55 The general recommendations given by S.H.E.D. are clear. The entire area is suitable for rehabilitation, the poorer area west of Abingdon Road about 1975-76; the better quality area further east in the early 1980's. The results show that about one-third of the existing houses should nevertheless be cleared to give more open space, car parking, or, in the case of about one-fifth of the cleared dwellings, because their quality is very low. Some of the cleared sites could be redeveloped, to provide about 90 dwellings, and all of the remaining dwellings would need at least some degree of rehabilitation. On completion of the scheme, the total number of dwellings remaining would be about 1,100. The detailed recommendations of S.H.E.D. are as follows, and their effects are summarised in table 12.3.

a the whole of the Action Area is classified as Priority 3, as is most of the rehabilitable housing north of Aynscombe Street and Albert Park;

b within the Priority 3 classification, however, are several years of rehabilitation action and the Southfield Road Action Area involves two distinct periods of action:

(i) phase I involves action work on the area bounded by Park Lane, Woodlands Road, Borough Road, Abingdon Road and Haddon Street in the period 1975-76;

(ii) phase II covers the remainder of the action during 1980-83. The area east of Abingdon Road and Haddon Street contains sound properties and includes Falmouth

Street, where improvement work has been actively encouraged by the local authority.

Table 12.3. *Reeving proposals, Southfield (dwellings)*

zone	I	II	TOTAL
to be cleared	400	80	480
to be redeveloped	80	0	80
to be rehabilitated	850	400	1,050

Design principles

12.56 The same general principles were applied to Southfield as had been applied to Parkfield; they were listed in paragraph 12.23. The proposals for Southfield were drawn in the context of the district plan for North Middlesbrough described in chapter 8, which showed the following:

a a local centre should be developed at the junction of Victoria, Waterloo and Abingdon Roads, providing shops and services;

b a main north-south pedestrian route should pass through the area linking through to Albert Park;

c the Victoria Road primary school should be given a greater amount of space by the clearance of land in its immediate vicinity. It will be replaced in the longer term by the Marton Road School and by a proposed new school at Broken Hill;

d the main local distributor roads are shown on

figure 8.3 and, in greater detail, in figure 12.8; other roads in the area should be designed to discourage fast moving traffic.

Action area proposals

12.57 The proposed scheme for the rehabilitation of Southfield is illustrated in figures 12.7 and 12.8. The main proposal is for the reorganisation of circulation within the area to create a hierarchy of routes:

a the local distributor roads will carry most of the vehicular traffic within Southfield;

b vehicular access to individual houses will be given by the system of loop roads off the main distributor roads; and by the demolition of intermediate blocks of houses to give rear access and parking areas;

c certain streets will be closed to vehicular traffic to create pedestrian routes linking the local centre, Albert Park, the Polytechnic and the town centre.

12.58 Another important set of proposals concern car parking. Parking for residents and visitors should be provided by the clearance of intermediate blocks. In the illustrated scheme, the amount of clearance would actually provide space either for 800 garages and 520 spaces, or 1,250 spaces. This would be sufficient to give slightly more than one space per dwelling. When action is actually to be taken, a more detailed survey should be made to establish current levels of car ownership, to

Figure 12.8
SOUTHFIELD ACTION
AREA, CIRCULATION



see whether this amount of demolition is really necessary.

12.53 On-street car parking is also a problem because of the recent growth of commercial and office uses on the northern edge of the area. Additional off-street car parks should be provided in the area for these uses, but parking and direct access to properties from Southfield and Woodlands Roads should be discouraged. The further extension of business and office uses in this area should also be stopped.

12.54 The local shopping centre on Victoria and Waterloo Roads should be designed for a system of rear servicing, and provided with car parking. The only redevelopment for housing should be close to the centre where not less than twenty old personal dwellings could be built.

12.55 The improvement of the appearance of Southfield will depend on detailed landscape and architectural

treatments but there are several larger proposals which should be implemented:

a open spaces should be created by the clearance of blocks of dwellings south of Holly Street and west of Abingdon Road;

b Woodlands and Southfield Roads are the only tree-lined roads in the area. Special landscape treatment should be taken to preserve their appearance;

c the perimeter wall to the Twining College (formerly Newlands Convent) should be replaced by good quality open fencing to open up views of existing open spaces;

d selected streets should be closed and made into children's play streets.

12.56 The illustrated scheme would provide about 1,140 rehabilitated and redeveloped dwellings in Southfield in an environment that could be attractive and would follow the principles of traffic segregation essential for housing areas.



13 South Middlesbrough district plan

Summary

a South Middlesbrough is committed to become a residential area for people working mainly in the regional centre and the riverside industrial areas.

b The population will rise from 12,000 in 1966 to about 48,000 on the completion of the committed development, probably by the mid-1970's, and to about 90,000 by 1981.

c The main additional residential development proposed is for:

320 acres at Coulby

570 acres at Newham

170 acres at Northhope

120 acres at Ormesby.

d Sites for industrial estates of between 100 and 130 acres are recommended for Northhope and Hemlington; and new district shopping centres of not

more than 100,000 square feet each at Coulby and Marton.

e The key feature of the open space system should be the development of West Marton Beck as a linear park from Middlesbrough to open countryside at Poole Park.

f The main parts of the primary road system for this area are the South Teesside Parkway and the Marton Moorway. An east to west link from Hambleton Hill to Stainton will be a vital link in the secondary road system.

Existing conditions

13.1 South Middlesbrough lies south of the A174-A1044 main road and west of the open space which separates Middlesbrough and Eton and is bounded as the site recommended for the University. Its southern and western boundaries are less easy to define but the



area corresponds roughly to that of District 7 in the urban structure policy.

13.2 At present South Middlesbrough contains a group of suburban villages on the southern fringe of the built-up area, namely Merton, Ormesby, Nunthorpe and Stainton; and several small villages, such as Newby and Seamer, which are still rural in character. The population is about 13,000.

13.3 Until recently, planning policy has been to keep the villages, both rural and suburban, as physically separate settlements. A series of recent planning permissions for housing, however, will entirely change the structure of the suburban part of this area. Merton and Nunthorpe will be joined by new housing and a large development at Hemington will link Stainton to the built-up area of Middlesbrough (see figure 13.1). Land between Hemington and Merton, and between Merton and Ormesby, will remain undeveloped. The planning commitments on these sites cover about 11,000 dwellings, or an additional population of 26,000.

13.4 Shopping provision is confined to local centres at Merton, Nunthorpe and Ormesby. Additional centres have been proposed to serve the committed housing at Hemington and Gypsy Lane, Merton, but no firm decision has yet been taken on their site or exact location.

13.5 The only secondary school is at Ormesby but, just to the north, campus sites are being developed by Middlesbrough Corporation at Acklam, Saltersgill and Priauld. However, the Ormesby site is to be extended to about 50 acres, sufficient for a further two schools. Provision will also have to be made for a secondary school to serve Hemington. Land for further education is confined to the reservation at Saltersgill for a use yet to be determined, and the possibility of using Ormesby Hall as a teachers' training college is under consideration.

13.6 The area includes three major open spaces: Stewart Park, north of Merton, belongs to Middlesbrough Corporation; Ormesby Hall and grounds is in the ownership of the National Trust; and there is the privately owned Middlesbrough Golf Course at Newham. Large open spaces are planned for Hemington: at Saltersgill, north of the area, and as a wedge separating Eton and Middlesbrough. The remaining open space, existing or committed, is of small scale.

13.7 Three north to south radial roads cross the district and provide access to Middlesbrough's central area. They are Acklam Road and the B1385 to Stokesley in the west; Merton Road (A172) in the middle; and North Ormesby Road and Ormesby Bank (A171) in the east. The A174-A1044 road from Yarm to Wilton forms the northern boundary of the area. These are mainly two-lane roads, congested at peak hours, and unable to cope with the committed development. They are to be supplemented by the proposed South Teesside Parkway which follows a route parallel and to the south of the A175-A1044. It will provide for improved east-west communications but does nothing for the main directions of flow to the north.

Urban structure policy

13.8 South Middlesbrough is therefore committed to become a major residential area for people working in the regional centre at Middlesbrough and in the river-side industrial area. The anticipated growth in population is sufficient to necessitate two substantial road schemes:

- a the South Teesside Parkway which would have to be of greater capacity than was originally committed;

- b a high capacity link with North Middlesbrough, the proposed Merton Motorway. This is necessary if the existing roads to Middlesbrough are not to be overloaded, or widened at the expense of the residential environment of Acklam and the other suburbs of Middlesbrough. A feasible line for such a road can be found parallel to the Nunthorpe branch railway and connecting with the A171 road to Gasbrough and East Cleveland and with the A172 road to Stokesley and the A18.

13.9 The area has capacity to accommodate a much larger population than has been committed, and it is desirable that it should do so, in the light of the planning objectives set out in chapter 5. The final urban structure policy, in chapter 6, was defined only after the feasibility study of the capacity for growth of south Middlesbrough had been completed. Its proposals are as follows:

- a land should be developed for an additional 12,000 dwellings at an average net residential density of about 11 dwellings or 40 persons per acre. This would bring the population to about 90,000 by 1991;
- b two industrial estates of between 100 and 130 acres should be located in the area, to provide for a dispersal of employment in the urban structure;
- c two district shopping centres should be developed, each with no more than about 100,000 square feet of shopping floor space by 1991;
- d one more secondary school campus site of about 90 acres will be required, in addition to that committed at Ormesby, in a location that will enable one school to be built soon to serve the committed development at Hemington;
- e about 100 acres of land will be needed for playing fields, in addition to that already committed. The amount of land for other types of open space would depend on local topography and environmental factors;
- f as a consequence of these further proposals, the South Teesside Parkway west of the intersection with Merton Motorway, should be a three-lane dual motorway with capacity to carry 70,000 vehicles a day by 1991; the Parkway east of this intersection and Merton Motorway should be two-lane dual motorways with a capacity for about 60,000 vehicles a day by 1991.

Alternative policies for development

13.10 A minimum amount of about 2,000 acres of land would be required for the proposed development and three alternative locations were considered:

- a land at Merton, south and east of Nunthorpe, in the direction of Great Ayton; this was the area suggested in the provisional urban plan;
- b land at Thornton, south and west of Hemington;
- c land at Coulby and Newham, between Hemington and Merton, and west of Nunthorpe.

In addition, 400 acres at Ormesby was included in each of the three alternatives, as it would otherwise be an undeveloped enclave in the midst of a built-up area (see figure 13.2).

13.11 The land at Merton and Thornton was rejected in favour of the third alternative for the following reasons:

- a there are extensive areas of rolling topography with a good tree cover at Coulby, Newham, Nunthorpe and Ormesby. These should form a pleasing, mature environment for housing. Whilst the Merton area has a superb setting at the foot of the Cleveland Hills, the site itself is very flat and difficult to drain and the tree cover is poor. The Thornton area is generally exposed;

Figure 13.1
SOUTH
MIDDLESBROUGH
EXISTING



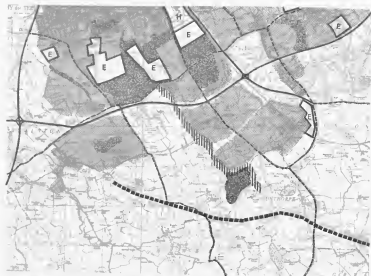


Figure 13.2

SOUTH
MIDDLESBROUGH

ANALYSIS



b land at Coulby and Newham is dissected by West Merton Beck, a deep wooded valley running northwards, which could be the basis for an open space system through the area, linking with that south of Middlesbrough. Whilst the Merton area has the fine Langbrough ridge to the south, it has no features of landscape merit within its boundaries. The Melby Beck passes through the Thornton area but is less attractive than the West Merton Beck;

c the agricultural quality of the land at Coulby and Newham is relatively good but its location, surrounded on three sides by urban development, is such that farming could continue only under difficulty because of trespass and nuisance. Also land in this type of location would be liable to intense pressure for development whether or not it were recommended for development. By contrast, the two other areas would be clearly outside the urban fringe and could continue to be efficiently farmed;

d perhaps the most important land use and landscape consideration, however, is that the Cleveland Dyke ridge could form a fairly clear natural boundary for urban development in the foreseeable future. This watershed is a marked feature from Hemlington to Nunthorpe, separating a basin of urban development which would include Coulby, Newham and Nunthorpe from the rural area draining southwards to the Lazenby valley. No such natural boundary could be defined for the Thornton area, and the natural boundaries for the Merton area are further in the countryside;

e Coulby, Newham and Nunthorpe form a relatively compact development close to the South Teesside Parkway and the Merton Motorway. The other two areas are further out and would require a greater investment in new primary roads and would lead to longer journeys to work.

The district plan

13.12 The recommended district plan is shown in figure 13.3. This plan has been devised mainly to demonstrate the feasibility of the urban structure policy in this area. Further work is needed before a local plan could be drawn in a form suitable for development control.

13.13 The main residential areas suggested for development are shown in table 13.1. As a net residential

Table 13.1. Gross residential area, South Middlesbrough (acres)

Residential	Coulby	328
	Newham	670
	Nunthorpe	179
	Ormesby	120

density of about 11 dwellings or about 40 persons per acre, the distribution of dwellings in South Middlesbrough could therefore be that given in table 13.2.

13.14 The local planning of these areas would have to provide for local shopping centres, primary schools and open space. Some preliminary studies for instance show that Hemlington would require two local shopping centres of about 16,000 and 20,000 square feet on the basis of the local shopping policy in chapter 3, paragraph 3.122.

Table 13.2. Estimated numbers of dwellings, South Middlesbrough

	existing 1968	estimated	proposed	total 1981
Hemlington	300	4,000	0	4,300
Coulby	0	0	3,900	3,900
Newham	1,400	2,700	0	4,100
Nunthorpe	1,100	2,200	1,300	4,600
Ormesby	1,200	1,700	1,400	4,300
rural areas	200	0	0	200
TOTAL (Hemlington)	4,200	11,300	5,600	21,100

13.15 The siting of three centres and the primary schools should be closely related to the development of a system for pedestrian movement which, in turn, should link with the open space proposals for the area as a whole. The key to this system is the use of West Merton Beck as a linear park joining the Middlesbrough open space with the golf course. Poole Hospital lies in extensive grounds. It is expected to close as part of the rationalisation scheme for hospitals, and its grounds could then become a southern extension of the open space system. The proposed secondary school campus site would be an arm of the open space system to the west.

13.16 The two district centres should be located at Coulby and Merton. In addition, the small centre at Ormesby should be encouraged to grow in size to a limited extent as suggested in chapter 6, paragraph 6.18.

13.17 The industrial estates should be located at Hemlington and Nunthorpe, relatively close to the primary road system. Their minimum employment by 1981 is likely to be about 3,900 each, of which about a sixth should be for women. It would be reasonable for the Nunthorpe estate to be the location of a major office development should there be a demand which would not be satisfied by a site in the Middlesbrough regional centre. The location of the Nunthorpe estate, at one of the main entrances to urban Teesside, is highly significant and a very high standard of architectural design and landscape treatment should be set.

13.18 The main elements in the primary road system have already been specified. The secondary road system serving the area depends greatly on an east-west road between Stalton and Hemlington Hill capable of carrying up to 30,000 vehicles a day by 1991. The exact alignment of this, and the other roads, can only be fixed after more detailed planning but the approximate lines and suggested intersections with the primary road system are firm recommendations.

13.19 Development in the first ten years would start with the committed housing development, to which should be added the district centres at Merton and Ormesby but not the industrial estates. A substantial part of the South Teesside Parkway would also be built in this first ten year period. The remaining development would not take place until after about 1976 and the construction of the Merton Motorway. If additional housing were constructed before the new road to North Middlesbrough, the result would be serious congestion on the existing roads, the South Teesside Parkway and the realigned A15.

Figure 13.3

SOUTH
MIDDLESBROUGH
DISTRICT PLAN

14 Levenside district plan

Summary

a Levenside includes the existing settlements of Eaglescliffe and Yarm, along the A19, with a population of about 11,000. This is likely to increase by a further 10,000 as a consequence of recent planning decisions and it is recommended that the population of this area should rise to about 100,000 by 1991, by the development of the following areas:

740 acres at Ingbley Barwick;

430 acres between A1044 and the new A19, at Leven Bridge;

470 acres south of Yarm;

740 acres at Kirkbuckington.

b The development of these areas is associated with the likely growth of employment on land committed for industrial development at Urley Nook, Eaglescliffe and Thornaby. Together, these could provide an additional 20,000 jobs. A further site may have to be developed in the longer term. This should be south of Kirkbuckington, near the A19 road. Additional employment will be in the two district centres which should be built at Ingbley Barwick and Kirkbuckington.

c The Leven and Tees valleys are very attractive and should become the main areas for recreation, by way of landscaped treatment of the Tees valley and a country park in the Leven. Secondary school and further education campus sites should be linked with the main open spaces in the valleys.

d The primary road system depends upon the realignment of the A19 and the extension to Eaglescliffe of the South Teesside Parkway.

e The secondary road system provides for improvement to the existing roads A19 and A1044, including a new bridge across the river Leven. The secondary road system serving Ingbley Barwick must be located and designed so that it will not attract through traffic wishing to go from the south to Stockton.

f The development should start in the 1970's at Ingbley Barwick for a nucleus of local authority and private housing. It should be provided by the establishment of the Leven valley country park.

Existing conditions

14.1 Levenside is the area west of the new line for the A19 trunk road and south of the proposed extension to the South Teesside Parkway as far as Eaglescliffe. It is a plateau that has been deeply cut into by the rivers Tees and Leven. The main settlements are at Eaglescliffe and Yarm which are now growing suburbs of Stockton straddling the A19 trunk road. The other settlements are small and still rural in character. The present population of the area is about 11,000 but land has been com-

mitted for housing at Eaglescliffe and Yarm sufficient for a further 10,000 people.

14.2 The current road framework is the existing A19 trunk road, a north-south route crossing the river Tees at Yarm by a difficult bridge; and, from east to west just south of Yarm, the B1284-A1044 which crosses the river Leven by an equally difficult bridge. The two other principal routes are the B1273 west from Eaglescliffe to Darlington; and the A1044 road south from Thornaby to the A1044.

14.3 All these roads are of two lanes. Their inadequacies are most apparent on the two river bridges; at Yarm, where the A19 is the High Street; at Eaglescliffe, where the A19 is lined by houses on both sides, and at the B1273, the link to the Airport and the industrial area at Urley Nook. This last, however, is currently being improved by the construction of a bypass. The realignment of the A19 and its construction as a two-lane dual motorway is the main committed improvement. This will leave the existing A19 at Cuthbert and pass northwards to Thornaby and the river Tees. The Thornaby road, A1045, is also being improved to a dual carriageway.

14.4 Urley Nook is the main industrial area, including a chemical works, an engineering works and an Admiralty Stores Depot. At present, about 2,000 people are employed but this is likely to rise to about 10,000 by 1991 with the development of 150 acres as a privately owned industrial estate at Eaglescliffe; and the further development of land in the ownership of the engineering works. Nearby, at Thornaby, is the new Board of Trade industrial estate. Its size is 336 acres and employment on it could reach about 12,000 by 1991.

14.5 Yarm High Street is the only shopping centre, with about 30,500 square feet of floor space. It is a broad street with a small town hall in the middle. Lined by three and four storey buildings of the eighteenth and nineteenth centuries, it is one of the most attractive urban scenes on Teesside.

14.6 The only open spaces are a golf course at Eaglescliffe and Preston Park, the grounds of a small country house that is now a municipally owned museum. The rest of the area is farm and woodland.

Urban structure policy

14.7 The future role of Levenside in the urban structure was set out in chapter 6. Its location and the commitment for industrial development make for an increase in manufacturing employment of at least 20,000. The full potential of this commitment will be realised only if a commensurate growth in population takes place, with

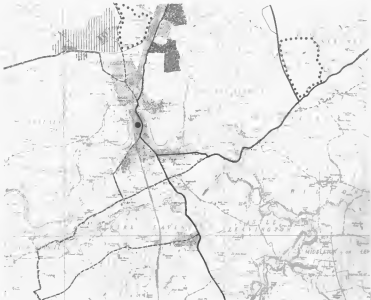


Figure 14.1
LEVENSIDE
EXISTING



good accessibility to the industrial estates, in what could become a highly attractive environment.

14.8 For these reasons, and after this feasibility study had been completed, the final proposals were:

a provision of land for about 23,000 new dwellings in the urban area and about 1,000 dwellings in villages; at a density of about 40 persons per acre, this would give a population of about 51,000 in addition to the existing and combined population of 21,000;

b provision of land for a further industrial estate of about 100 acres, in proximity to the new A19; this would provide for long term growth and the proposal is made in recognition of the attraction of this area for industrialists;

c two district shopping centres of about 100,000 square feet of floor space each;

d two large secondary school campus sites, each of about 100 acres and a site of about 80 acres for further education;

e a development of the lower Leven valley as a country park later to be a major part of the urban open space system, together with the valley of the river Tees.

14.9 The main communications proposals of the primary road system are:

a the realignment of the A19, which should have a capacity by 1981 to carry 50,000 vehicles per day north of the new bridge across the Leven, and 30,000 vehicles per day further south;

b the proposed extension of the South Teesside Parkway west of the realigned A19 across the river

near Preston-on-Tees as far as Eaglescliffe where it would link with the realigned S1273 to the Airport and Darlington. It would require a capacity by 1981 for about 20,000 vehicles per day west of, and up to 70,000 vehicles per day east of, the intersection with the proposed Stockton motorway on Ingleby Barwick;

c a line should be reserved for the long term construction of a western bypass to Yarm and Eaglescliffe. This would attract no more than about 7,000 vehicles per day by 1981, which would not be sufficient to justify its construction including a new crossing of the river Tees upstream from Yarm. Two circumstances could make the construction of this road necessary:

(i) future growth of population after 1981 in this area; this was discussed in paragraph 7.31;

(ii) the anomaly of Yarm High Street which is discussed later in this chapter.

Analysis of the local problems of Levenside

14.10 The committed industrial land at Eaglescliffe and Thornaby, and the proposed realignment of the A19, are the key features in the future development of Levenside (see figure 14.2). The major weakness of these commitments is the lack of easy access by road to Eaglescliffe especially from the east; journeys by road from Middlesbrough have to come via Thornaby and Stockton. A lesser, but important, weakness is that the Thornaby industrial estate is comparatively inaccessible by road from the west. The South Teesside Parkway will correct this weakness.

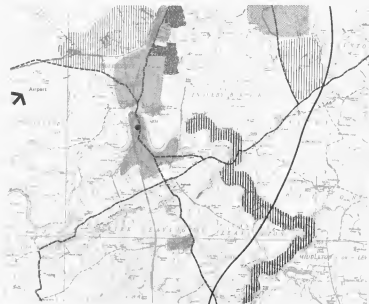


Figure 14.2
LEVENSIDE
ANALYSIS



14.11 A big problem is the development of Levenside is the cost of bridging the deep valley of the river Leven. Two roads have to cross the valley, the new A19 and the A1044. The difficulties of bridging mean that it would be preferable for as much new housing as possible to be located north of three bridges at Ingaby Barwick and near Leven Bridge. The main traffic flows from development in these areas would be to urban Teesside and would not have to cross the valley.

14.12 Development in this area, that is west of the river Tees, would also be easily accessible from the regional centre at Teesside. These areas are to be preferred, particularly in the short term, to development south of Yarm or west of Eaglescliffe, as they would help foster the growth of the regional centre.

14.13 The landscape of Levenside is varied. That of Ingaby Barwick, to the west of Kirkclevington and Crathorne and near Héton, is rather flat and treeless. The landscape near Yarm and at Kirkclevington itself is more attractive being well wooded with some attractive, small valleys. The valleys of the Tees and the Leven are very attractive, and the Leven valley has been recommended for development as a country park. Residential development beside the Leven valley would therefore possess excellent visual and recreational amenities. Finally, the Teesside Airport poses a problem in this area. Its noise generation militates against further development west of Eaglescliffe.

14.14 In summary, therefore, much of the land in this district may be ruled out for urban development:

a west of Eaglescliffe: development would be detrimental to the growth of the regional centre at Middlesbrough; the quality of its landscape is relatively poor and it is likely to be affected by Airport noise. It is possible too that this may prove a good area for large scale industry in the long term, as was mentioned in chapter 8, paragraph 8.28;

b west of Yarm and south and west of Kirkclevington: much of this area is of relatively poor landscape quality but the main factor ruling it out for development is its remoteness from Teesside;

c Héton and Middleton-in-Leven, east of the realigned A19: the landscape is mostly bare and exposed, in a rural area of good farming quality. The new line of the A19 forms a suitable eastern boundary of the built-up area and should be accepted as such.

14.15 The land recommended for development lies between the existing and realigned A19 route and west of Yarm and Kirkclevington. It has the following advantages:

a it is a fairly compact extension of the built-up area, close to the main future centres of employment, Ingaby Barwick, in particular, has exceptional strategic advantages of location between Eaglescliffe and Thornaby;

b a new industrial estate could be developed in a suitable location, near the new A19;

c the development makes use of the capacity afforded by the realigned A19. Development at Ingaby Barwick and Leven Bridge would give savings in transport costs by making maximum use of existing and committed



Figure 14.3
LEVENSIDE
DISTRICT PLAN

- Residential area
- Open space
- Industry
- District centre
- Education
- Primary road reserve
- Existing roads
- Proposed roads
- Country park

0 1/2 1 mile

roads. Development south of Yarn, at Kirkcubright and Castle Levenside, would require a greater investment in roads, particularly the replacement of the A1044 bridge across the river Leven, and the construction of the Yarn bypass;

d the area has good accessibility to the regional centre at Middlesbrough.

The district plan

14.16 The recommended policy is shown in figure 14.3. It is a feasibility study that demonstrates that the urban structure policy for this part of Teesside will work. More work will be needed before a full local plan can be prepared and used as a brief for design and for development control.

14.17 The main proposed residential areas are listed in table 14.1, if these were developed at an average net

Table 14.1. Gross residential areas, Levenside (acres)

south of Yarn	470
Kirkcubright	750
Ingaby Barwick	380
Levens Bridge	430

density of about 40 persons or 11 dwellings per acre, this would result in the approximate distribution of dwellings shown in table 14.2.

14.18 These calculations are approximate. The actual net densities would vary between about 20 and 70

Table 14.2. Estimated numbers of dwellings, Levenside

	existing in 1988	consented	proposed	total 1991
Engelside	1,800	1,800	0	3,700
Yarn	700	1,100	4,800	6,600
Kirkcubright	900	300	8,500	9,700
Ingaby Barwick	0	0	7,700	7,700
Levens Bridge	0	0	4,800	4,800
road area	260	0	1,400	1,700
TOTAL (rounded)	3,660	3,200	24,200	30,400

persons per acre in different parts of the development, providing a variety of types of housing. The design of development could be enhanced, and a higher quality of environment could be produced, if landscape planning were started well before the construction of houses. A programme for woodland management and tree planting in advance of development at Ingaby Barwick is illustrated in chapter 15.

14.19 The open space system for Levenside would be based on the use of the Tees and Leven valleys and the small tributary valleys. Proposals for the landscape treatment of these valleys are given in chapters 15 (the Tees) and 16 (the Leven). The tributary valleys would be used to provide wedges of open space linking the main open spaces with the residential areas. The two areas recommended for secondary and higher education form part of this open space system.

14.20 The district shopping centres should be at Ingaby Barwick and Kirkcubright. Each should have

about 100,000 square feet of shopping floor space but that at Kirklington should have a location that would permit larger term expansion, should this prove desirable, as was suggested in chapter 7, paragraph 7.32. The best site for the additional industrial estate is in the south of the district, near the new A19 road.

14.21 The primary road system has already been described and a recommended secondary road system is shown in figure 14.3. Three of these secondary roads are of special significance.

a The existing A19 will need the capacity to carry up to 30,000 vehicles a day by 1991 on the section between Cuthome and the A1044 road. Volumes of traffic through Yarn High Street are likely to be about 11,000 vehicles a day by 1991. This is of the same order as the present day volume of traffic and it is possible to argue that this would not be incompatible with maintaining the architectural quality of the High Street, especially as the proportion of heavy goods vehicles in the traffic would probably be less. However if the western bypass to Yarn were built on the alignment shown in figure 14.3, it would attract about 7,000 vehicles a day, leaving a volume of about 4,000 vehicles a day in the High Street.

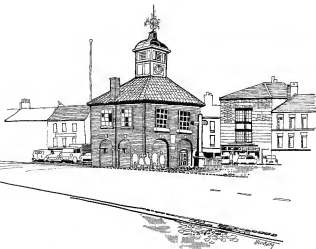
b The A1044 road should be improved to provide a capacity for 30,000 vehicles per day by 1991, that is after the development of Kirklington and Castle Levington. The main proposal will be for a new bridge across the river Leven; the existing Leven Bridge would remain as part of the local road system serving the Leven valley country park.

c The secondary road giving access to Ingley

Berwick from the realigned A19 and the South Teesside Parkway should be planned to avoid giving a direct and easy route between these two parts of the primary road system, if it were made a direct route, traffic volumes of the order of 50,000 vehicles per day could be expected by 1991, mainly people travelling through Ingley Berwick to Stockton and Middlesbrough. This volume would be quite inconsistent with the planned character of the road and its environment.

14.22 This district lies outside the boundary of the new Teesside County Borough, within the North Riding and County Durham. Its urban development should start at Ingley Berwick, in the 1970's, and meet at Leven Bridge. As was noted in chapter 7, paragraph 7.12, some of this development should be for local authority housing, mainly overspill from the clearance and rehabilitation schemes within Teesside County Borough. Implementation of the proposals for the Leven valley country park should be set in hand before the residential development is started. If it is delayed until after the urban development of Ingley Berwick, there will be a serious risk of irreparable damage to the landscape of the valley.

14.23 Development at Yarn, and later Kirklington, should follow only after improvements to the A1044 road have been completed. It should be emphasised that development at Kirklington by 1991 will be necessary only if there is regression to Teesside at the forecasts. If this does not happen, the Kirklington proposals, including the district centre, the campus and the industrial estate, would probably not be required for a number of years.



Yarn-on-Teas

Summary

a Inglsby Barwick is selected as an example of an area to be developed in the future but for which a landscape policy should be implemented before development. The policy is for the local authority to become responsible for the management of existing woodlands and new tree planting to provide a more attractive basis for housing development.

b The landscape implications of urban motorways are illustrated by an analysis of the realigned A65 through Stockton and Middlesbrough. The analysis concentrates on the view from the road and the need for an urban design policy that takes account of this.

c Proposals are given for the landscape treatment of the banks of the river Tees between Yarm and Middlesbrough, as and when the existing industrial uses cease.

d The landscape treatment of an industrial area is illustrated by reference to the views from A178 through the Billingham chemical complex.

e Methods are described for the temporary landscape treatment of derelict or cleared sites (including iron-masters) pending their eventual redevelopment. In general, temporary treatment would be justified only for a minimum period of about three years and the cost would vary between £400 and £800 per acre depending on the method used and the possible temporary use of the site.

The landscapes of urban areas

15.1 The point has been stressed many times in this report that the development of a satisfactory and attractive urban environment is of fundamental importance. This will be achieved partly through the processes of redevelopment and rehabilitation of the existing urban area and by the design of new development, both industrial and residential. But the quality of the environment will depend as well on the detailed treatment of the urban landscape.

15.2 The design of urban landscape in Teesside has many different applications and five examples have been selected to illustrate major opportunities for improving its appearance. The first concerns the large areas of land that have been recommended for residential development. Each of the areas possesses natural features that may either be positive assets which can be used as the basis for designing the layout of the new development, or be weaknesses that need to be overcome before an attractive environment can be created. Preparations for eventual development should be started as soon as possible by preserving the attractive qualities of the area and by taking action to overcome their weaknesses. Action of this kind is illustrated by an analysis of the landscape of Inglsby Barwick and a

recommendation for a policy of woodland management and tree planting in advance of development of the site.

15.3 The second example is in relation to the construction of the recommended primary road system, which will introduce a new dimension into the appearance of Teesside, not only in the design of the road system and its associated landscape, but inasmuch as these roads will open up to travellers new and extensive views of Teesside. The first impressions of Teesside for many visitors will be the views from, say, the new A19 as they enter the urban area; or the views of the regional centre from the new A65. Some of the factors to be borne in mind are illustrated by an analysis of the new A65 road, between Stockton and Middlesbrough.

15.4 Thirdly, there are the natural features within Teesside whose appearance is either neglected or whose existing use is likely to cease. The most striking of these are the banks of the river Tees itself, upstream from the Transporter Bridge in Middlesbrough, and as outline policy for the future landscape of this stretch of the river is described.

15.5 Fourthly, come the activities of the sort sponsored by the Clive Trust for improving the appearance of the environment. These are so well known that they need no illustration on principles or methods, but there are cases requiring urgent action of this type on Teesside. High Streets such as those of Norton, Yarm and the country towns of Stokesley and Gilesgate provide one sort of example: exceptionally attractive streets that could deteriorate in appearance without careful management. However, there are very few examples of the improvement of the landscape of industrial areas and the route of the A178 through the Billingham chemicals complex has been taken to illustrate what could be done.

15.6 Finally, the scale of urban renewal and the recommended urban structure policy for Teesside mean that there will always be areas of cleared land for which no alternative, permanent use can be found for several years; or which should be held in reserve for a future use. Whilst it would be wrong to use such sites for a use on which expenditure might prove abortive, they should not be left in an unattractive condition. Methods are described for the temporary landscape treatment of such derelict areas.

Inglsby Barwick: landscape policy

Present character

15.7 Inglsby Barwick is an area of about 1,500 acres lying south and east of the big bend in the river Tees upstream from Stockton. It is bounded on the east by

A1045, the main road to Thornaby from the south beyond which lies the Thornaby industrial estate; and on the south by A1044 (see figure 15.1).

15.8 It is an exposed plateau, rising very gently from 60 feet in the north to 100 feet above sea level in the south. The plateau is sharply defined on three sides by steep escarpments bounding the valley of the Tees and by the deeply entrenched valley of the river Leven. Its eastern edge is marked by the gentler valley of Baslington Beck, and the plateau itself is dissected by the narrow valleys of several streams.

15.9 The predominant land use is farming, mainly permanent and ley pastures and arable, in small fields with hawthorn hedges. Hedge-row trees are few in number, but several of the groups of farm buildings have small ponds and groups of trees. The soils are mainly developed on boulder clay though with some sandy loams on the western edge of the plateau. The quality of the farmland improves from west to east, being of grade II+III quality at its best. The land is well managed and the farm buildings, roads and hedges are well maintained.

15.10 A contrasted land cover is found in the river valleys. The few woodlands on Ingleby Barwick are found on the steeper slopes of the Tees, Leven and Baslington valleys. Mainly they are young regenerating woods varying from dense hawthorn scrub to dense young hardwoods. A few mature trees are to be found alongside the courses of the rivers. The woodlands, except for a small plantation on Sandy Hill, are not managed, do not give shelter to livestock, and are not apparent in the landscape of Ingleby Barwick. Their only function is to help stabilise the steeper slopes of

the river valleys and to provide shelter for wild life but they are visually attractive.

15.11 A wide panoramic view is obtained from most parts of Ingleby Barwick but especially from its southern boundary. The Cleveland Hills provide a distant skyline to the east and south. The view to the west is softened by the wooded skyline, and is marked only by a prominent line of pylons beyond Egglecliffe. To the north and northeast is a harsher panorama of Stockton's housing and industry, and the landmark of the tall blocks of flats at Thornaby new town centre.

Urban structure policy

15.12 Ingleby Barwick was chosen as a site for urban development as part of the urban structure policy set out in chapter 5, and described in the district plan for Levenside in chapter 14. The proposal is that it be developed for a population of about 30,000 people at an average net density of about 45 persons per acre, though it was expected that densities would vary in different parts of the site, to permit a variety of types of development. In addition, about 110 acres would be needed for secondary and further education, and there would be a substantial provision of open space.

15.13 The open space would be consistent with the proposal that the Leven valley be created a country park whose landscape would be subject to conservation and development policies to provide recreation for the Levenside district and the rest of Teesside (see chapter 15). It would be consistent, too, with the proposal for keeping the valley of the Tees as an open space between Yarm and Stockton.

15.14 The third main urban structure policy affecting Ingleby Barwick concerns the primary and secondary road systems. It will be necessary, first, for the westerly extension to the South Teesside Parkway to cross Ingleby Barwick, with a new Tees crossing near Preston-on-Tees. The road thus has to cross Baslington Beck close to Thornaby Wood, and will cut off the northern, wooded part of the site from the larger area. This northern area will be open space but pedestrian access should be provided between it and the residential areas to the south. Care should be taken to minimise interference with Baslington Beck valley and Thornaby Wood either by unnecessary tree felling or by interfering with the natural contours and drainage of the valley.

15.15 Similar care should be taken over the other part of the primary road system, the start of the Stockton Motorway, north across the river Tees, and its continuation southwards as part of the secondary road system serving Ingleby Barwick.

Landscape proposals

15.16 There are two prerequisites for the development of an attractive landscape for Ingleby Barwick. The first is to make the best possible use of the natural features of the site; the second is to supplement and enhance the natural features by a policy of tree planting and woodland management that should be implemented as soon as possible.

15.17 The main natural advantages of the site are the river valleys and streams. They have the potential of becoming delightful routes for footpaths and bridleways between the residential areas, the river Tees and the Leven valley country park; their enclosed character makes them suitable for sheltered open spaces; and, as water courses, they have a special attraction. Equally,



Figure 15.1 INGLEBY BARWICK ANALYSIS



however, the landscape of the valleys is highly vulnerable to deliberate or accidental damage. They can be ruined by casual tipping of refuse; or by the destruction of the bankside vegetation either through vandalism or excessive use. They can be destroyed by the construction of main sewers and roads.

15.18 Therefore, the following principles are set out to guide the development of Bealeston Beck, the valley running north from Nyton House, that south of Sand Hill, and the lesser valleys:

a the banks of the streams should be graded and re-seeded; the stream beds given a lining of loose gravel; shallow pools and deeper channels in terraced formation should be constructed by weirs to control run off and silt; undergrowth should only be cleared to a limited extent and new bankside planting should be undertaken;

b the valleys should be the basis for residential site planning but they should be kept as public open space and no buildings should be located within 150 feet of the streams;

c main drainage systems should be designed to maintain or increase the water flow in the streams, with small lakes used as balancing ponds to reduce the effect of maximum run off;

d precautions should be taken to protect the valleys from damage during construction.

15.19 Other intrinsic attractions of the site are few. However, several of the groups of farm buildings are attractive and well constructed with orchards and ponds and these should be retained in the development.

15.20 The difference in soils on the site suggests a basis for varying the density of development. The northwest portion of the site, near Quarry and Barwick farms, and the centre of the site, along Barwick Lane, have heavier soils, and are more exposed. In these conditions relatively high densities, with small gardens or patios, would be more appropriate. Soils more suitable for cultivation in larger gardens, with development at lower densities, are found on the east of the site and on the western margin where there are sandy loams. The soils in this latter area, between White House and Ingleby Close, would also be the most suitable for creating a golf course.

15.21 A third feature to which attention should be given in the design of Ingleby Barwick are the extensive panoramic views of the Cleveland Hills south from the site.

15.22 The main disadvantage of the site is its relatively flat and exposed character, but much can be done by skilful development to improve this. A suitable proportion of high rise buildings, well designed and carefully grouped, would provide interest to the skyline, but the main method of overcoming this disadvantage will be by a well planned programme of tree planting both to give apparent variations in height over the area and to give shelter (see figure 15.2). The main principles for this should be:

a the creation and management of protected woodland areas where natural regeneration can take place; including the planting of new woodlands;

b selective planting on the fringes of existing woodlands to integrate them with the new land use patterns;

c the controlled clearance of scrub undergrowth and the cultivation of the ground, laying out of paths and underplanting of new, amenity trees;

d the planting of marginal land and along existing field boundaries and roads to create shelter belts, in such a way as to minimise interference with agriculture.



Figure 15.2 INGLEBY BARWICK:
PLANTING PROPOSALS



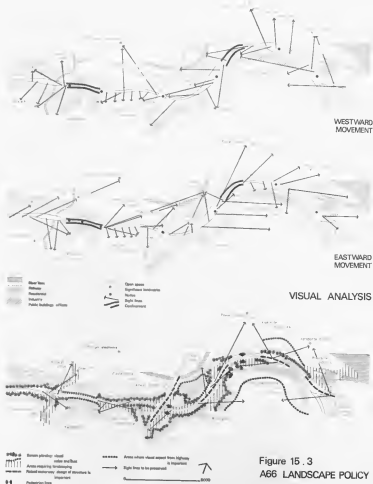
15.23 The tree planting programme and the schemes for managing the existing woodlands on the site should be started as soon as possible, partly because the cost of planting will be relatively low at this stage compared with similar landscape treatment during or after the construction of buildings. Other reasons for early action are that the effects of vandalism on new planting are likely to be greater if planting were postponed until after construction, and finally, that the sooner planting is carried out the sooner will Ingleby Barwick have a mature landscape.

15.24 Existing woodlands should therefore be purchased and brought under management as soon as possible by the authority who will be responsible for the development. Alternatively Tree Preservation Orders should be made on these woodlands though this would be less satisfactory.

15.25 Local authorities are able to plant trees prior to development by one of two methods:

a under powers that may be contained in a local Act which would allow the authority to purchase land compulsorily for the purpose of tree planting prior to development in the knowledge that the land will in the near future be needed for development purposes; a clause to this effect is contained, for instance, in the Durham County Council Act, 1983;

b provision is made in the National Parks and Access to the Countryside Act, 1949 (s. 85), for a local authority to make arrangements for planting and maintaining trees on land not being owned by the authority; agreements have been made with land owners, for instance, by Essex and Lancashire County Councils.



The realignment of the A66 trunk road

15.26 The proposed realignment of the A66 trunk road from Stockton, through Thorneby and Middlesbrough, will be a major feature of the recommended primary road system for Teesside. The appearance of this road and its detailed landscape treatment will be very important though they will have to be determined when the engineering designs of the road are being drawn. But, at the larger scale, the views obtained from the road will be of equal importance and will be affected by policies for the development of adjacent areas.

15.27 The method of surveying and analysing the visual setting of the route is by making an assumed journey in each direction along the line of the road, noting views of prominent features, the character of adjoining development and the profile of the road itself. The survey raises a number of points (see figure 15.3):

a there are a number of existing prominent features which would be clearly visible from many parts of the route and that act as reference points for the traveller in locating himself. They include the Transporter and Newport Bridges, the riverside industry at Billingham, the Teesside Park racetrack as well as waste heaps and derelict areas;

b the raised sections of the road especially around the Middlesbrough central area will create wide panoramic views, outlining, in the background, in the Cleveland Hills;

c the route lies in part through areas of poor quality housing which are to be cleared. The noise likely to be generated by traffic on the road means that, on average, no dwellings should be nearer than 200 feet from the road, though a more detailed study should be carried out when the detailed design of the road and its landscape have been settled;

d the greater part of the route will pass through areas of industrial and commercial development where the larger scale of buildings will help create an interesting townscape for the motorist;

e the route also crosses areas of open space, mainly the river Tees and the recreation, which will give excellent opportunities for integration with the landscape treatment of the road.

15.28 The main design factors affected by the new road are:

a extensive and panoramic views to which special attention should be given to include:

(i) the views along the river Tees at Stockton, mainly upstream towards Ingleby Barwick though views of the riverside at Stockton central area may be possible depending on the height of the new bridge;

(ii) the view of the Cleveland Hills where the road passes near Teesside Park racetrack, and Sainsbury Beck;

(iii) the panoramic views of Middlesbrough central area and Ironstone from the elevated sections of the new road. The design of development in both areas must be given careful consideration, the appearance of roof architecture being of equal importance to the appearance of elevations and street scenes;

b views of focal or reference points visible from the road should be preserved and the location and design of new points settled, such as the civic centre for Teesside or the Teesside Polytechnic;

c untidy or unsightly areas visible from the road should be given landscape treatment or otherwise reclaimed, or should be screened from view by dense planting. These include, for instance, the banks of the river Tees upstream from the new bridge at Stockton;

d the design and construction of the raised sections

of the road, and its relationship with, for instance, the new A19 road, must be treated carefully as they will be visible from large areas of Teesside;

e the road should be integrated where possible with adjoining open spaces by carefully designed earth modelling and tree planting, for instance, near the recreation.

The river Tees valley

15.29 The river Tees has three distinct sections within the survey area. Upstream from Yarm it flows through a very attractive, wooded valley as in open countryside; and this happy state of affairs should be safeguarded for the future. At the mouth of the river, and in the estuary downstream from the Transporter Bridge, the river banks are the scene of large scale industrial and port developments and have their own distinctive grandeur.

15.30 The section of the river between Yarm and Middlesbrough, however, is of a different character. In the past it was used by industry and the rest of the community turned its back on the river, but much of this industry is likely to close in the future. New road bridges will be built for the realigned A19 near Middlesbrough, the realigned A66 at Thorneby, the Stockton Motorway, and the South Teesside Parkway at Ingleby Barwick. Proposals have been made by consultants for the cleansing of the river by the construction of a scheme for sewerage. These changes together create the prior conditions for integrating this section of the river into urban landscape for Teesside with tremendous advantage to the population.

Yarm to Preston Park

15.31 The river between Yarm and Preston Park runs in a narrow valley with steep, well wooded banks rising to the plateau of Ingleby Barwick and Eaglescliffe. Both pedestrian and vehicular access to the riverside is difficult though rights of way do exist. The current agricultural character of this section of the river will change with the committed and proposed development at Yarm, Eaglescliffe and Ingleby Barwick, bringing development within sight of the river.

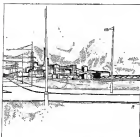
15.32 South east of Aiskoy, near Yarm, commercial quantities of sand and gravel are thought to exist. Exploitation of these might facilitate the formation of a lake, depending on the route to be reserved for the western bypass to Yarm and the high tension grid lines. Downstream from Yarm, the valley should be developed as a landscape strip with tree planting to screen it from building development, and natural entry points to it at such locations as the valleys of the Laven and Bessington Beck. The tree planting illustrated in figure 15.2 and the country park shown in figure 16.2 would result in a landscape suitable for walks, picnic areas and playing fields.

Preston Park to Victoria Bridge

15.33 This currently is the transitional zone in which industry begins to dominate the riverside. The valley here is broader with lower, flat farmland on its northern and western banks. It is also damper, more liable to atmospheric pollution and the river itself is more intensely polluted. The steep banks on the Thorneby side are cluttered with allotments and derelict areas with houses on the skyline. New industries dominate the Stockton bank though they are set back from the riverside which is mainly occupied by derelict industrial land.



Figure 15.4
INDUSTRIAL
LANDSCAPE
IMPROVEMENTS,
BILLINGHAM



15.34 The landscape treatment of this section is complicated by the proposals for the primary road system, including the A66 realignment, the South Tees-side Parkway extension and the Stockton Motorway. The slopes of the Thornaby bank, already wooded in part, should be further planted to screen the electricity and other unsightly development and a riverside walk constructed. On the Stockton bank, the derelict industrial sites should be enclosed providing land for industrial development at Bowesfield, approached via Bowhouse Lane (see figure 10.3), but with the river bank retained as a landscaped riverside walk.

15.35 Much of this section is lined by neglected wharves and jetties, and mudbanks. The main activities are Stockton Quay, which is to close, the works of Head Wrightson & Co. Ltd., the Maitland Steel Works, and, further downstream, open farmland on the north bank, and marshalling yards on the south. The only hints at visual interest are the glimpses of Stockton High Street and the church at Thistle Green (see figure 10.1); a short but pleasant walk near the steel works which has provided shelter for trees and shrubs; and the current programme of Head Wrightson for tree planting and landscaping its part of the riverside.

15.36 There are good opportunities for creating a riverside prospect near Stockton High Street, particularly near the north and where the bend in the river at Thistle Green could be made into an attractive open space linking the High Street and the civic area with the riverside (see figure 10.2). If possible, too, the scheme for the redevelopment of the eastern side of Stockton High Street and the proposed eastern relief road to the town centre should be designed to open up views of the riverside. The complement to these will be the successful implementation of the tree planting and landscape programme on the opposite bank of the river, screening Head Wrightson's works.

15.37 Further landscape treatment in this section of the river is precluded mainly by the marshalling yards, though there may be an opportunity on the north bank on open land. The problem is likely to be its dampness and exposure. The main change to the appearance of this section of the river will come, in fact, from the construction of the new road bridge of the A19.

Newport Bridge to Port Clarence

15.38 Industry occupies the entire north bank. The untidy appearance, river and atmospheric pollution and noise are the dominant features. The scene of activity, massive cooling towers and shalyard zones is both impressive and interesting. The Ironworkers District occupies the south bank; it is now almost entirely derelict.

15.39 Treatment of this section is likely to be limited, effectively, to Ironworkers as there is little prospect of much change on the north bank. Proposals for its reclamation were given in chapter 3.

Landscape treatment of A178, an industrial area

15.40 The A178 road passes through an area of heavy industry for about two miles including the Billingham Works of ICI, a power station and several other chemical works. Similar areas of heavy industry are to be found in other parts of Teesside but this has been selected to illustrate principles of landscape treatment for all such areas. The main aim is to create a more positive landscape in which the basic shapes of industrial plant are the dominant elements and the minor discordant elements are recognised and proposals made for their removal or treatment.

15.41 The main discordant element along this stretch of road is the clutter of huts and sheds, rubbish, fences, poles, signposts, and ad hoc car parks to be found on every piece of available land that is visible from the road. In a visual sense, this clutter detracts from the grandeur of the main industrial plant and operates against the efficient functioning of the road as a means of communication.

15.42 Illustrations of the clutter and of the likely effects of the landscape treatment are shown in figure 15.4. The main proposals are:

- a the removal of unnecessary fences; in some cases as many as three fences fulfil exactly the same function, of giving security and defining the site boundary;
- b using well sited fences made of sympathetic materials as an integrating feature;
- c using shrubbery, well located and well designed advertisements or fences to screen any waste disposal, and car parks;
- d removing unnecessary (i.e. duplicated) signs and poles by, for instance, placing traffic signs on lamp posts or fences.

15.43 Other proposals for enhancing the basic character of the landscape include:

- a earth modelling to give the impression of land forms sweeping right up to the bases of industrial plant;
- b the proper use of incidental pieces of waste ground by a planned system of car parking, waste disposal and other activities;
- c the use of colour to add a proper variety to the landscape by well sited, large advertisements and by painting of large buildings.

15.44 In themselves, these types of action are relatively small and cheap. Their effect, however, is cumulative in creating an acceptable landscape. The activities of the Civic Trust in improving the appearance of town centres are well known. Equally striking results could be obtained in industrial areas.

Temporary landscape treatment

15.45 Between 1,000 and 1,500 acres of housing are recommended for clearance in the urban structure policy. There are also large areas of industrial dereliction on Teesside, including abandoned works and waste heaps. Each of these cleared or abandoned sites is left in a derelict and unsightly condition, uneven, strewn with bricks and other rubble. Their appearance is not only offensive in itself, but encourages vandalism and leads to a progressive deterioration in the environment of adjacent areas.

15.46 The redevelopment of the sites may take place immediately after clearance, but, in many cases, a delay of up to several years or more may elapse. The reasons for this include:

- a delays caused by the length of time to go through administrative processes; the lack of financial resources or other means to undertake redevelopment; any apparent shortages of professional skills;
- b the future, planned use is decided, but the pressure of demand for that use may be such that redevelopment will not take place until some time after the site has been cleared;
- c the cleared site is required as a reserve for some future use such as a new road.

15.47 The first of these reasons should be overcome by more effective programming of clearance and redevelopment schemes, but the latter two reasons must be accepted as necessary and permanent factors in the planning of Teesside. The problem is to ameliorate the unsightly and derelict condition of these cleared sites during the period in which they lie fallow. The solution is a policy of temporary landscape treatment at relatively low cost.

Policy for temporarily derelict areas

15.48 Four factors must be considered in determining the landscape policy for any particular site.

a The size, shape and slope of the site: sites will range in size from the plot of a single house to many hundreds of acres; in shape, from a simple, rectangular plot to the most awkward; in slope from the level to waste heaps.

b The condition of the site: cleared sites of old houses and buildings can be left in a condition specified in the demolition contract, which, for temporary landscaping, should be at least three inches of crushed building rubble or similar material, with no particles greater than one inch in diameter; derelict industrial sites will be much more variable in character.

c The minimum period for which the site is likely to remain fallow: temporary landscape treatment for playing fields, say, would only be justified if the site were expected to lie fallow for three years; and no form of landscape treatment would be justified for a period of less than about nine months except leaving the site in a tidy condition.

d The future, definite use of the site: if the future use is to be housing, schools and public buildings or parkland and open space, a more expensive form of landscape treatment would be justified to create the conditions for the development of top soil, and for tree planting.

15.49 From these factors a range of treatment can be specified, including:

- a leaving a cleared site in a tidy condition and screening it by well designed advertisement hoardings, on the example, for instance, of Gateshead Corporation; this is most suitable for small, awkwardly-shaped sites where the fallow period may be relatively brief;
- b giving the site temporary landscape treatment as a children's playground; this would be for relatively small sites (up to two acres) of any size or shape, in relatively close proximity to residential areas;
- c level sites of more than two acres, to lie fallow for three or more years, could be given treatment and laid out as playing fields and open spaces of which there is a serious shortage in the older housing areas;
- d irregular large sites unsuitable for playing fields but to remain fallow for several years should be tidied and planted with deep rooting grasses and legumes so that a satisfactory soil profile could be built up within, say, five years. If these sites are to be used in the long term for parks, houses or buildings which will be associated with open spaces, tree planting should also be carried out;
- e finally, certain sites near town centres should be levelled and tidied and maintained as temporary, off-street car parks.

Techniques of temporary landscape treatment

15.50 Five techniques for landscape treatment would be suitable for this problem. Each of them involves clearing the site of rubbish, bricks, etc. and spreading a three-inch layer of crushed rubble, not larger than one inch in diameter, over the site. Each technique also involves fencing the site during the period of germination. The costs of the alternative methods are given in table 15.1.

15.51 *Direct cultivation and sowing* involves spreading of seed and fertiliser by machine and a light chain harrowing. The main problem is likely to be a failure of germination or subsequent failure because of a lack of moisture. But, with maintenance, grass will grow though it will not be suitable for playing fields for a number of years. Mechanical processes would apply when the sites are larger than two acres.

Table 15.1. Approximate costs of temporary landscape treatment (£ per acre)

	direct mechanical	cultivation voluntary	pulverised fuel ash	processed domestic refuse	hydraulic seeding
clearing site	100	100	100	100	100
seeding and cultivating	180-200	100	180-220	140-240	160-240
fencing	500	50	100	300	100
TOTAL	440-840	210	840-710	780-830	420-600

15.52 An alternative method of direct cultivation and sowing would be to use voluntary labour, with the local authority supplying tools, materials and supervision. Smaller areas or sites unsuitable for mechanical cultivation would be best fitted. Examples of the use of voluntary labour are to be found, for instance, in Glasgow where school children are planting trees in open spaces; the Lancashire Community Council; and Community Service Volunteers in County Durham.

15.53 The use of pulverised fuel ash involves obtaining and spreading the material over the site; harrowing the ash and rubble; spreading seed and fertiliser; and, as an optional addition, spraying a bluminous preparation to prevent the ash blowing about. The main advantage of this method is that the 'soil' has a greater capacity for retaining moisture and there is less risk of failure. The disadvantage is that the method is at its cheapest on large sites and if they are windy or exposed the material gets blown about.

15.54 Processed domestic refuse has to be brought from a source of supply and spread over and harrowed or dug into the rubble. Seed then is sown on this material. The refuse adds humus, improves moisture retention and does not need fertiliser. These advantages are particularly important if a close knit sward is to be developed for playing fields. The refuse can be processed in a machine such as the Vickers Seedrum Refuse

Disposal Unit. The material produced by this machine is clean, safe, and has no unpleasant smell. The cost of this method depends on the availability and consequent cost of the domestic refuse.

15.55 Hydraulic seeding needs no surface cultivation or top soil provided the site is in a suitable condition with the three-inch layer of fine, crushed rubble. A mixture of seed, water and fertiliser, micro-organisms, trace elements and soil bacteria is sprayed on the ground and, subsequently, a spray of chopped straw mulch. The seed can be sown at any time of the year and on to any type of ground, including steep slopes and awkward shapes. Almost any type of vegetation can be established, including trees and shrubs.

15.56 Finally, if trees are to be planted, they should be species most capable of growing in urban conditions where levels of atmospheric pollution are relatively high. Conditions of atmospheric pollution in, for instance, North Middlesbrough and Ironmasters, are roughly similar to those of the lower Swansea Valley. Pilot studies there have shown that if soil conditions are improved to a suitable condition such as would be given by either of the last two methods of landscape treatment, then tree planting can be successful. The most suitable species include Norway maple, sycamore, alder, silver birch, hornbeam, hawthorn, ash, plane, white and black poplar, and willow.



Stockton Quay

16 Country parks

Summary

Proposals are given for the design of three of the recommended country parks for Teesside.

a A resource development plan for the middle valley of the Billingham Beck illustrates problems of design in an area already feeling the impact of urban development. The main features of the design are its integration with the recommended urban development to the north, near Walsaton; and the improvement of its landscape by the creation of a lake and park.

b A resource conservation plan for the lower Leven Valley illustrates a different sort of problem. The valley is attractive and unspoilt, mainly because of its isolation from built-up areas. This will change because of the proposed urban development of Levenside and the problem will be to maintain and enhance the attractions of the valley. The policies will include tree planting, the creation of two lakes and controlled means of access.

c A plan for the development of a country park at Great Ayton Moor in the National Park illustrates how proposals for afforestation and improved means of access could make this into a park capable of accommodating relatively large numbers of visitors.

Country parks

16.1 The concept of specialised country parks formed one of the main proposals of the White Paper on *Leisure in the Countryside* (Cmd. 2528, 1966). The rising demand by the urban population for leisure and recreation in the countryside was recognised as a growing problem with many facets. A crucial factor was that, as greater numbers of people seek to spend some of their leisure time in the countryside, there would be a greater risk of irreparable damage to the very features that attract visitors from the towns. Country parks would aim to cope with this problem by:

- a giving an opportunity to town dwellers for leisure in the open without having to travel too far;
- b easing the pressure on more remote and solitary places which would thereby be enabled to retain their special character;
- c reducing the risk of damage to the countryside, and avoiding unnecessary inconvenience and expense to the country dwellers.

16.2 The proposed country parks would not take over the role of the national parks but rather supplement it by providing facilities of an organised character for local urban populations while the national parks would continue to attract population from a much wider area.

16.3 The White Paper stressed that country parks could

be of many varieties whether in size, which could range from a few to many hundreds of acres; or in the degree of sophistication of the facilities they would offer, varying from car parks to organised sports; or in their location. Their common features would be ease of accessibility to the urban population and a planned provision of arrangements for the leisure requirements of the visitors.

16.4 Administrative and legislative arrangements for country parks are now proposed in the Countryside Bill, which would give Local Authorities the power to provide and manage country parks with the assistance of grants from the Exchequer. In this they may be assisted and encouraged by the newly established Countryside Commission whose functions include and enlarge those of the National Parks Commission.

16.5 The general requirement for country parks for Teesside was given in paragraph 6.24, four sites for parks being:

- e the middle valley of the Billingham Beck together with the nearby Winesyard Park;
- f the lower valley of the Leven;
- g Eton Moor;
- h a forested country park on Great Ayton Moor.

Each of the four sites meets the prime requirement of ease of accessibility to urban Teesside. The two river valleys are close to the built-up area but large enough to form recognisable and extensive recreation areas, one for the population on the north bank, the other on the south bank of the Teas. Eton and Great Ayton Moors are further afield but, particularly the latter, are in locations where they will attract day visitors from Teesside to the North York Moors National Park, thus reducing pressure on the more remote and wilder parts of the Park.

16.6 This chapter describes proposals for three of the four country parks and illustrates the principles that should govern their design and development:

- a a resource development plan for the middle valley of the Billingham Beck illustrates the problems of design in an area already feeling the impact of urban development;
- b a resource conservation plan for the lower Leven valley illustrates the principles of design for an area as yet unaffected by urban development but to be seriously affected within the next ten to fifteen years;
- c a resource development plan for Great Ayton Moor, an already well wooded and attractive area of the North York Moors National Park, illustrates the principles for its more intensive development for recreation.

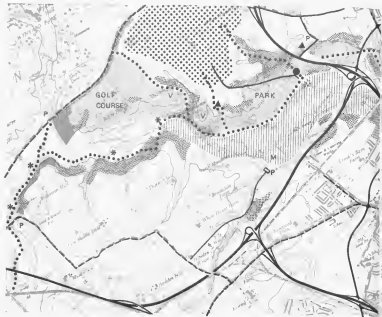


Figure 16.1
BILLINGHAM BECK
LANDSCAPE
PROPOSALS



Billingham Beck

Description of the valley

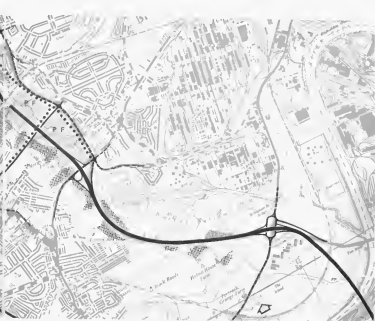
16.7 The seven miles of valley from Thorpe Thewles to the Tees consists of a wide variety of landscape characteristics of which it is impossible to give a generalised description. The rural aspect of the valley at Thorpe Thewles gives way progressively downstream as urban elements emerge until, at its confluence with the Tees, the valley becomes completely dominated by industry. It is this gradual change that accounts for the spectrum of landscape identities and which pose special problems for recreational and landscape development. The valley can be divided into five zones.

16.8 Zone 1: Thorpe Thewles to Bottle Hill (two miles). A small scale landscape, predominantly pasture, this zone is pleasingly defined by the railway viaduct and embankment in the west, and the strong masses of forest within Wynyrd Park in the east. Sporadic woodland and undulating valley sides complete the visual enclosure in the north and south. Willows closely lining the banks of Thorpe Beck and scattered hedgerow trees, ash and sycamore reaching 80 feet, provide visual interest within the valley itself. Urban elements do not intrude upon the rural scene to any great extent, and although a double row of power lines divide across the valley, the number of pylons visible at any one time is limited. The railway viaducts and old mineral workings have become absorbed within the landscape and in

fact form features of considerable visual interest. Framed within the valley sides is a long view eastwards to the Billingham chemical complex, a hint of the increasing urbanisation downstream.

16.9 Zone 2: Bottle Hill to Davis Bridge, A19 (one and three-quarter miles). This, the largest zone, comprises some 300 acres. Whilst still almost entirely under agricultural use there is evidence of the urban encroachment so often associated with fringe areas at the edge of conurbations. Near the A19, which is elevated on an embankment 25 feet above the valley floor, a confused array of overhead wires, industrial densification, tipping of industrial waste, slack development, together with a marked absence of substantial tree and hedgerow growth, and a prevalence of poor, often water-logged pasture land, indicates a landscape that has become run down. Further west the zone merges into the mature parkland of Wynyrd Hill and assumes the rural characteristics associated with Zone 1 but, despite this change, the zone remains a visual entity being bounded emphatically in the east by steep road and railway embankments, and being contained generally within the steep valley sides that skirt the expansive flood plain. A number of water courses converge here to form Billingham Beck which flows southwards to the Tees.

16.10 Zone 3: Davis Bridge, A19, to Norton Road (three-quarter mile). Many of the qualities of Zone 2 prevail in this area. Poor drainage is very evident and



flooding usually occurs several times a year. The area can be classed as poor grazing land. Skirted on the north by the massive railway embankment, on the east by the A19 road embankment, on the south by Norton Road, and on the west by residential development around Norton Village, the area is visually enclosed and access is severely limited. A fly recreation ground exists at the foot of the road embankment, but this is very much under-used because of the lack of playground equipment and the physical separation from the residential area at the other side of the A19 dual carriageway. A new road is under construction across the valley joining Billingham Motors roundabout to Norton.

18.11 Zone 4: Norton Road to A1046 (one and a half miles). This zone comprises the shallow marshy valleys of Bilbingham Beck and Lustrum Beck and the low interfluvium between them as they flow on parallel courses southwards to the Tees. With the exception of the Holme House farm group, the area itself contains no substantial buildings, and yet is densely built up on its margins. The ICI chemical plant spreads across the skyline to the northeast, and on the opposite side, the edge of the zone is less emphatically defined by residential development at Norton and Mount Pleasant. The major land uses are agriculture, the deposition of chemical waste, and railway marshalling yards. A pocket of unused land contiguous to the built-up area of Norton is at present being graded and prepared for

private housing development, and part of Holme House farm is being developed for the liner train depot.

18.12 The lines of pylons, evident in Zones 2 and 3, continue throughout the length of this zone but their impact is less against the backdrop of the chemical works. More significant adverse factors in the landscape are the very high level of pollution, the visual impact of the chemical waste, and the noise generated by the industrial plant and the A1130 trunk road which, keeping to the higher ground on the interfluvium, bisects the zone on its long axis.

18.13 Zone 5: A1046 to the Tees (three-quarter mile). This zone is a featureless part of the old flood plain of the Tees. Flood-bunds have been constructed along the back sides and the flat land put to industrial use. An expanse of particularly marshy land still exists in the southwest, land formerly enclosed within a meander of the old Tees, but levelling and spreading has been executed in order to facilitate expansion of the trading estate southwards to the banks of the Tees. The whole of this zone is committed for industrial development but neither Bilbingham Beck nor Lustrum Beck has been culverted and public rights of way still exist along their banks and alongside the north bank of the Tees itself.

The case for recreational development

18.14 The valley of the Bilbingham Beck, therefore, does not have any high intrinsic quality of landscape

nor is there intense competition for its development, apart from uses such as storage or waste disposal. As a consequence the valley has an impoverished environment and declining land values, but with the prospect of residential development on the north side of the valley between Wickham and Wynyard, the improvement of the environment of the valley becomes both necessary and feasible. Its use for recreation affords the best means of achieving significant results because of the increasing demand for informal and varied leisure activities, particularly those using water. This pattern of leisure and recreation and its influence on urban structure policy was described in chapter 3 paragraphs 3.136 and 3.137.

16.15 The proposed alignment of the A16 and the northern bypass to Stockton, actually passing through the Billingham and Thorne valleys, will bring most of urban Teesside within a 15-minute car journey. The opening of Wynyard Park to the public would stimulate a widespread interest in the area and, whilst no attempt is to be made to rival the qualities of the Leven valley, a strong landscape framework could be established relatively quickly. However, in spite of Wynyard Park and the landscape framework, some other regret is required to attract visitors. Unique features exist within Zone 2 which make the corridor of a water area a natural development:

- a a broad flood plain, up to 1,000 feet in breadth, centred by a steep bank in slope at either edge;
- b heavy clay sub-soil;
- c markedly little hedgerow and tree cover, thus reducing the problems of preparing the ground;
- d poor quality farmland under permanent pasture, the soil being too heavy for successful crop production;
- e the proposed construction of an embankment to take the Stockton bypass across the valley which could be designed as a terminal dam structure.

16.16 About 40,000 people now live within one mile or a 20-minute walk of the valley and, when the new areas are developed west of Wickham, the number will rise to nearly 70,000. Landscape and recreational development within the valley would contribute substantially to local and district open space requirements, and in so doing, would overcome existing deficiencies in Billingham and Stockton. In this case, therefore, it is important that a balance be struck between the provision of regional and local facilities.

16.17 The Tees valley and its tributaries was regarded as a single, interconnecting resource zone in the urban structure and the definition of an open space system for Teesside. The Billingham Back valley is a major element in the system and its use for recreation a major determinant of urban land use policy.

Summary of proposals (see Figure 16.1 and table 16.3)

16.18 Zone 1: The zone is essentially rural in character and its agricultural quality is distinctly higher than elsewhere within the valley. The incidence of hedgerow trees is high and the forest trees of Wynyard Park feature strongly in the downstream section. Careful plans should be made to combine mild recreation pursuits with continuing agriculture. Selected picnic sites, streamside pathways and strategic car parking should be defined, whilst new woodlands could be planted to shelter, screen and enclose individual areas.

16.19 Zone 2: There are strong reasons to develop this zone as a water area and, by flooding it to the 30 foot contour, a lake of 175 acres is possible. In addition

to the late, three mooring centres are recommended, two of which, on the south lakeside, could be private. The third, on the northern lakeside should be a marina, associated with a larger centre housing facilities for refreshments, dancing, indoor sports, bowls, tennis and children's play. This would serve primarily the new development immediately to the north. A linear lakeside park, including an 18-hole golf course and education playing fields, should be incorporated and block tree-planting could be sited to screen the skyline, screen eyesores, and improve the micro-climate. It is anticipated that with the good regional connections planned, this zone will receive large numbers of visitors and three major vehicular access points associated with all-day parking should be strategically positioned.

16.20 Zone 3: This is a waterlogged area of poor pasture land, visually enclosed by road and railway embankments and by residential development. It is a comparatively sheltered area, but suffers from periods of high atmospheric pollution, and is rather inaccessible. By topsoiling, grading and leveling, over 45 acres of playing fields could be provided. Ground modelling could provide smaller areas for play, screen the complex of pylons in the northwest and reduce noise levels from the A16.

16.21 Zones 4 and 5: As both these zones are committed or proposed for non-recreational uses, particularly industry and external storage, efforts here should be directed towards improving the visual scene. The landscape treatment of industrial areas, such as that described in chapter 15, tree planting and ground modelling would help greatly to give a more pleasant character to what would otherwise be a barren, poorly used prospect. This is necessary because of the use of this section of the valley as the route for the A16, the main trunk road through Teesside.

Table 16.1. Proposals, Billingham Back Country Park

land uses:	
i block tree planting	200 acres
j parkland	180 "
ii 18-hole golf course	100 "
iii playing fields	45 "
iv water area	175 "
TOTAL, including Wynyard Park	705 acres
other uses:	
vi roads for recreational use, lakeside drive, access to recreational areas	1 mile
vii regional pathway: footpaths, cycleways and bridleways	7 miles
viii car parks: 50-200 cars	3
up to 500 cars	3
day-ways, Wynyard Park and lakeside drive	8
ix diverside picnic areas, 5-10 acre each	3
x buildings: park centres, with restaurant, cafe, kiosks, hall, mooring areas with beachouses, open sheds, club rooms, pavilion and changing rooms for playing fields, toilet blocks for picnic areas	

The Leven valley

Description of the valley

16.22 The valley extends some six miles from Crathorne to the river Tees. The landscape through which the meandering river flows is a rather featureless plateau where the topography varies only gently between 150 feet and 175 feet. The Leven has cut sharply into this plateau and the very steep valley sides, reinforced over much of the valley's length by banks of woodland, bring about an almost complete visual enclosure. In contrast, the valley floor is flat, almost 220 yards wide, and virtually treeless. Downstream of Leven Bridge the

valley cross-section becomes more of a 'V' and the valley floor, as such, disappears. South of Crathorne, the depth of the valley and the steepness of the sides become less, and it is only upstream of Huron Ruddy that external features, notably the Cleveland Hills, become visible from the valley. Thus by virtue of steep topography, woodland, and meandering alignment, the valley comprises an identifiable sequence of self-contained spaces of considerable landscape quality.

16.23 The river itself, on average 20 feet wide, is in a stage of late maturity, meandering across the full width of the valley floor, and at several points, cutting into the slopes to form cliffs up to 20 feet high. The immediate banks of the river are steep, generally about 3 feet high, and flooding is rare, except in abnormal storm conditions. The construction of a weir at Leven Bridge has stopped tidal flooding upstream of that point.

16.24 Woodland plays an important part in moulding the spatial character of the valley. Tree planting, except for sporadic riverside groups of alder and willow, has been confined almost exclusively to the steep valley sides, giving added emphasis to the natural break in slope at the edge of the valley floor. Sycamore, ash, oak and elm are the dominant species although mixed coniferous and deciduous woodlands become more predominant upstream from Grade Hill. The area between Crathorne Hall and Crathorne Mill Bridge exemplifies the richness of texture and colour that an area of mixed woodland provides. For the most part the woodland is mature and well maintained, although some of the older plantations, Red Hall Wood and Flowerer Wood, show signs of deterioration. Young plantations, generally pine and larch, are few in number, and yet they add much to the landscape variety as well as giving commercial benefits, such as at Dark Bark, Crathorne. The valley contains 280 acres of woodland.

16.25 Pasture land accounts for the majority of land not covered by woodland, although crops are grown on a small number of fields. Difficulties of access and fragmentation and severance of areas within the valley from the remainder of the farm holdings at plateau level, render the valleys basically inferior both for arable and pastoral use. All the farmland falls within category IV and thereby compares unfavourably with agricultural areas in the immediate vicinity, which vary between Grade II and III. Grazing is a very important factor in maintaining the landscape: the contrast of short meadow grass with woodland gives the essential character of the valley.

16.26 Buildings do not feature strongly in the valley landscape although Crathorne Hall, framed by parkland trees and shrubs, dominates the views from within the valley upstream for half a mile. Farm buildings, notably Mount Leven, Ingleby Hill and Ingleby Close Farms in the north of the study area, sit on the shoulder of the valley and are prominent skyline features. They represent an important means of external orientation, being the only visual features common to both valley and plateau. The small settlement at Leven Bridge on the A1044 is the only substantial group of buildings within the valley itself. Although it is at present rather noisy and dangerous, and in parts untidy, a pleasing sense of place has been created by the narrow bridge and the tight cluster of buildings. Other items within the valley, such as chicken coops, sheep development, pylons and power lines, are less pleasing, but do not detract too much from the environmental quality, and pose only minor problems in terms of landscape development.

16.27 Commanding viewpoints are found at Castle

Hill, site of an early English castle and at Round Hill, an ancient barrow. The woodlands, because of their inaccessibility, are colonised by many bird and wild life species that are not found near the built-up areas, and the river itself is regularly rich in non-migratory fish: chub, dace and brown trout.

16.28 Recreational use of the valley at present is severely restricted by poor accessibility. Members of several fishing clubs enjoy access to much of the actual streamside, but the general public, attracted to the valley by its intrinsic beauty, is unfortunately restricted to established bridging points and certain areas in their immediate vicinity. The bridges themselves are attractive features and the views from the road at Roston Bridge and Crathorne Mill Bridge especially, are very pleasant, but enjoyment is reduced by overcrowding and restricted movement. The Leven valley, however, has within an area where pleasure motoring and picnicking are popular at weekends and holidays.

Sub-regional context

16.29 At present, only about 3,000 people live within easy distance of the Leven valley, mainly at Yarn. But the recommended urban structure provides for an increase of population so that, by 1991, about 50,000 people will live within about two miles of the valley. Further, the construction of a primary road network will bring the majority of the population of urban Teesside within a 15-minute car ride of the valley.

16.30 Teesside is, at present, deficient in outlets for leisure activities. Preston and Stewart Parks are the only areas of appropriate parkland open to the public. The Leven valley has the potential for being developed to create a broader range of recreational opportunities for the urban population.

16.31 It is vital that the Leven valley be planned, developed and managed as a recreation area for the increasing numbers of leisure-seeking townfolk, and also for making the best use of the area's resources.

Action policies

16.32 Policies for the development of the valley derive from two sources: the specific problems likely to arise in the valley itself and general principles for the design of a country park. The major problem is likely to come from the increasing intensity in the use of the valley. At present, the valley is in a completely rural setting but well before 1991 it will lie within the urban area. Damage, erosion and misuse of the Leven landscape by the public has been minimal solely due to its being so inaccessible. A human 'invasion' could destroy much of the unique qualities of the valley within ten years, for it is in this initial period, before investment in recreational facilities are fully effective that the landscape is most vulnerable.

16.33 A policy for the conservation of resources by strict control over access into and within the valley must therefore be the first stage in a management policy for recreation. Therefore, the siting of recreational activities should be determined by the intensity of use associated with each activity, and the capacity of different parts of the valley to absorb them. Landscape areas should be classified at this conservation stage by an index of vulnerability. The most vulnerable areas would be those which are most accessible and have a delicately balanced ecology. The necessary complement to a policy for conserving the most vulnerable areas would be to concentrate the most intensive use in

Figure 16.2
THE LEVEN
VALLEY
PROPOSALS

- Primary road system
- Secondary roads
- Stair layouts
- P Desert
- Park recreation areas
- V Viewing point
- ▲ Visually dominant buildings
- M Moorings
- Existing woodland
- Proposed woodland
- Off course
- Flowing fields
- Proposed lakes
- Edge of residential development



areas of low vulnerability, if landscape quality is to be maintained.

16.34 A second problem is that of integrating the landscape areas of the valley with the proposed surrounding urban development. This will be difficult as the valley is virtually invisible from the plateau on either side. Possible methods of achieving this integration would include:

a natural entry points should be emphasized and extended into the urban development, so obvious pathways into the valley;

b new entry points, visible from within the built-up areas, should be created, and a greater awareness of the valley's landscape gained by the construction of peripheral routes overlooking it;

c a conspicuous visual link between valley and plateau should be formed by the siting of strong building groups, visible from the two;

d the establishment of a continuity of land use between valley and plateau at certain points would create functional linkages.

16.35 A third problem is the need to provide for more opportunities for water based recreation. Denwent reservoir, 35 miles away, is the nearest inland stretch of water for sailing and boating and is intensively used. Possible methods of provision in the Laven valley include the flooding of wet gravel workings, though this may be more likely in the Tees valley near Yarm; the excavation of the alluvium of the valley floor; or raising embankments carrying roads across the valley as dam structures.

16.36 The comparatively narrow, meandering river will not be able to support all the diverse, often incompatible, water based activities. It will be necessary therefore to create large areas of water of sufficient size to support several activities without conflict, and to apportion certain sections of water to specific activities where multiple use is not feasible.

16.37 The fourth problem is that urban development will consume all of the land on either side of the valley downstream from the new bridge carrying the realigned A19, thereby leaving the fragmented farms holdings within the valley unsupported. These intermediate and low quality pasture lands should be brought into public ownership immediately, as a first stage, whilst the valley lands upstream from the A19 should be considered as a second stage. Plans for the management of the valley's natural resources, landscape unity and recreation are likely to be severely prejudiced unless much of the valley is in public ownership.

16.38 The general principles of design for a country park to be applied in the case of the Laven valley are:

a recreational and entertainment facilities should be concentrated and grouped where possible in order to achieve the maximum benefits of multiple use, and to create a strong feeling of contrast within the parkland between areas of intensive use and wild areas;

b the range of recreational facilities should be such as to encourage whole family participation in a particular area, even when its various members may wish to participate in different activities;

c access to the parkland should be controlled and contrived to discourage random movement through woodland or over steep, easily-eroded slopes;

d car parks and viewing areas should be provided in sufficient number to allow easy access on foot to recreation and entertainment centres, and also to facilitate the viewing of large portions of the valley for those who cannot, or do not wish to, leave their

cars. Care should be taken over the siting and appearance of car parks;

e circulation within the parkland should be designed to link recreation and entertainment centres with strategic viewpoints; link up with a broader framework of urban pathways and regional footpaths; and to accommodate cyclists and horse riders, as well as pedestrians. Consideration might be given to a commercially operated form of park transport in order to link areas of concentrated activity;

f existing woodland of quality should be maintained, but selective felling and underplanting should be undertaken in over-mature and derelict woodland; and clear-felling should be considered as a means of opening up vistas or improving the form of existing tree masses. New mixed plantations would provide a mature landscape with a variety of both age and species in its tree-croscs;

g particularly important natural habitats should be reserved for educational use and made accessible only at appointed times.

Summary of proposals

16.39 In the preparation of policies for the management of the Laven valley it has been necessary at times to go into detail to ensure that the emergent basic philosophies are sound and workable. Only the governing decisions, however, together with critical supporting points are given in this report. The proposals are summarized in table 16.2.

Table 16.2. Proposals, Laven Valley Country Park

i existing woodland	250 acres
ii additional tree planting	60 "
iii lakes, area 3 times 6	35 "
iv open spaces, including golf courses	450 "
v pasture land	115 "
TOTAL, Centre to river Tees	1,000 acres
Other areas:	
vi new peripheral road system	4.5 miles
vii footpaths, cycle tracks	51 miles
viii car parks	6
ix bridges	4
x picnic areas	50
xi terrace viewing areas	6

16.40 The valley should be divided into linked sub-zones in such a way that a variety of landscape character and recreational activities can co-exist with the minimum of conflict. Seven zones have been identified (see figure 16.2).

Zone 1: Round Hill to Laven Bridge: this area, sparsely wooded in comparison with upstream areas, is steep-sided and has no valley floor. It is recommended to develop this section as a district park designed to serve primarily people in the immediate vicinity. Control over access, a footpath system and footbridge crossings of the river, are amongst the more important aspects to be considered.

Zone 2: Laven Bridge Area: already a point of focus within the valley, this area should become an entertainment and leisure centre serving both regional and local populations. The design and emergence of commercial recreation buildings, provision of car parking facilities, and the tidying up of the area by the removal or screening of unpleasant uses are all important.

Zone 3: Laven Bridge to the new A19 crossing: a well wooded, very attractive section of the valley, with an expensive valley floor. It has been selected as

the larger of the two zones devoted to water based recreation. This recommendation involves, *inter alia*, using the A1044 replacement road as a dam structure to provide a lake area of some 60 acres, boating and marina facilities and the felling or underplanting of certain woodland areas.

Zone 4: A19 road crossing to Castle Hill. this area should have its present character and charm maintained as far as possible, and its development as a passive recreation zone would be most appropriate. Existing fishing rights and grazing enclosures should be maintained; riverside pathways, associated with picnic areas provided; and all car parking provision sited outside the visual envelope of the valley.

Zone 5: Castle Hill area: the area which commands broad views of the curving river could become in the very long term (after 1991) a recreational centre incorporating stadium, sports hall, swimming bath and outdoor sports facilities. The management of Brew-

dals, a wooded tributary gill, as a footpath link to this recreational centre is considered vital.

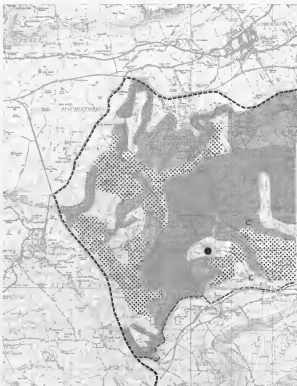
Zone 6: Castle Hill to Flaxton Bridge: this should become the second of the large water areas and should be designed and reserved for low density water uses, such as yachting.

Zone 7: Flaxton Bridge to Cudworth: a beautiful area and possibly the most picturesque section of the valley which should be considered as an exercise in conservation planning. All plans for access, routes and activities, should spring from the fundamental criterion of maintaining the present natural balance in the landscape.

16.41 Motor car access to the valley should be provided from the primary and secondary road systems, and a circulatory road system with facilities provided at the edge of the valley for car parking and viewing areas, to enable motorists to get reasonably close to their eventual destination.

16.42 Finally, notwithstanding the division of the

Figure 16.3
GREAT AYTON
FOREST PARK:
PROPOSALS



welley into seven use-zones, its essential continuity should be emphasised, and plans made for a system of footpaths, cycletracks and bridle-ways through the valley, and thence southward as far as the Cleveland Hills.

Great Ayton forest park

16.43 Surveys made on Teesside and elsewhere show that most leisure trips to areas similar in character to country parks are made by families who travel by car within a radius of 25 miles. The objects of the trip are usually pleasure driving, walking and picnicking.

16.44 The moors of the Cleveland scarp, from Gilesgate Moor, above Stokesley, to Gulsborough, already attract this type of visitor in relatively small numbers. They are well suited for a country park. Their varied and attractive character means that they would be able to provide for day visitors. And as they lie on the northern, most accessible edge of the North York Moors National Park, they would attract a large proportion of day visitors to the National Park if the right facilities were provided, thus reducing pressures on the more inaccessible and remote parts of the Park.

16.45 Within this general area, Great Ayton Moor is probably the most suitable location for a country park for the following reasons:

a it is easily accessible by road and by rail both from Teesside and the coast, and lies within three miles of the nearest part of urban Teesside;

b it has a varied topography including Roseberry Topping, a striking landmark visible from much of Teesside;

c it is well wooded, with roughly one-third of its area covered by forests, much of it being part of Hambleton Forest leased by the Forestry Commission;

d an area that is well wooded and suitable for further afforestation is especially well suited for a country park compared with a farming area because of the greater durability of forests in tolerating public usage; and the greater ability of forests to absorb large numbers of cars and visitors without obvious visible signs.

16.46 It is suggested that Great Ayton Moor be made a country park in which afforestation would play a major role in its development. Because of this, the Forestry Commission should be associated with the national park authority and the local authorities in the planning and development of the park. The Forestry Commission would be responsible for the management of the woodlands, including the acquisition and planting of suitable land, but would be guided on amenity matters by the park authority.

16.47 The main principles to be followed in the design of the park would be:

a the first priority should be given to questions of amenity and recreation rather than, say, the economic management of forests, or the efficient movement of through traffic;

b the claims of conflicting types of recreation and leisure interests must be properly recognised, mainly by methods of segregating mutually incompatible uses or activities such as vehicular traffic and walking; or fishing and riverside walks; or nature reserves and sporting interests;

c nonetheless, the country park should be designed to cater for a relatively intensive use by different types of day-visitors from Teesside.

Description of the park

16.48 The park is bounded on its north and west sides by a steep scarp slope rising abruptly from 400 feet

to about 700 feet above sea level. The river Leven, flowing through Kildale, forms the southern boundary. There is no natural boundary on the east, only a gradual transition from steep-sided hills to the broad, undulating plateau of Gulsborough Moor and an arbitrary line has therefore been chosen, through Skeldale and Kildale Moor. The area thus defined (see figure 16.3) is of the order of 6,000 acres, but it could be extended further east. It lies entirely within the National Park.

16.49 The character of the landscape of the park is very varied. The scarp slope rises from lightly wooded, undulating country at 400 feet to a height varying between 700 and 1,000 feet, with Roseberry Topping outstanding at 1,057 feet. There is a correspondingly rapid change from fairly fertile agricultural land, both arable and pasture, to heather covered, peat moorland grazed by sheep. Much of the scarp slope has been planted by the Forestry Commission, and the conifers, which emphasise the ridge line, mask most of the scars left by former limestone mining. Some scars are still visible below the plantations, tending to mar approaches to the park. Streams flow southwest off the scarp of Newton Moor into an attractive bowl-shaped valley below Airy Holme farm, enclosed on three sides by the scarp. The courses of these streams are marked by strips of deciduous woodland amongst the farmlands. Another bowl-shaped valley surrounds Lonsdale farm, but here the farmland is in the valley. The upper moorlands are less distinctly etched, and the rolling tops are more uniform in slope cover and the valleys shallow and poorly drained.

16.50 The park has a strong feeling of unity given it by the emphatic enclosure of the scarp slope and the frequent points of interest within it, such as hamlets and groups of farm buildings. It is a small-scale, contained landscape with many subtle changes in appearance within relatively short distances. It is ideal for the visitor on foot.

Forestry proposals

16.51 Timber production will be a second priority to that of recreation and, therefore, the relatively high standards that guide the Forestry Commission in selecting territory for tree planting need not necessarily apply. However, certain limitations should be accepted in deciding which land should be planted:

a it should not normally be capable of more beneficial use;

b it should be capable of growing healthy trees fairly quickly, at the lowest possible cost; this usually means land below the 1,000 foot contour though good growth has been found at 925 feet at Hutton Lowcross;

c it should not be unduly exposed unless the forest is to provide shelter;

d it should drain easily and be free of pollutants in the atmosphere or the soil that might retard growth.

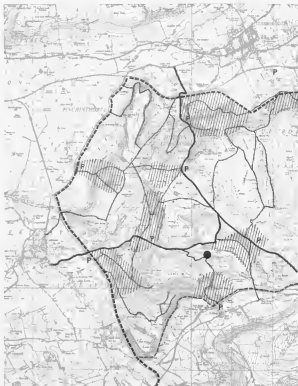
16.52 In these circumstances, the best land for tree planting is Great Ayton Moor itself, an area of about 1,000 acres. Within this broad area, tree planting should be guided by the following principles:

a planting should be carried out in the areas for long distance walks mentioned in the next sub-section;

b planting must be designed to ensure that viewpoints are maintained, not only in the immediate future but also when the trees are fully grown;

c sufficient space must be left to preserve the open character of the moors, particularly the open character of the edge of the scarp which could be destroyed by insensitive planting;

Figure 18.4
GREAT AYTON
FOREST PARK :
ACCESS



d groups of forest trees should be used to define areas of special character or to link together compatible areas;

e planting should be sited to give shelter to farmer, visitor and the various activities of the park.

16.53 The actual planting of trees in an area predominantly to be used for recreation should follow these design principles:

a changes of soil and topography provide a basis for varying the species and shape of planting;

b the visual impact of boundary lines should be carefully considered: plantation outlines should conform wherever possible to the natural configuration of the land; straight lines at right angles to the contour and lines following the same horizon contour should be avoided;

c planting on hill land should accentuate land form but planting on level ground should rely on mixtures of species or make large scale changes of species;

d strip planting of species up and down hill should be avoided;

e bridle-ways and rides should preferably be diagonal to contours, and should be curved, to give endosectory external views and contain internal views.

16.54 The choice of species is controlled mainly by ecological factors. The altitude and exposure of Great Ayton Moor necessitates the planting of conifers. Broadleaf, deciduous species, valuable for giving contrasted habitats and seasonal variety, will have to be limited to sheltered areas, gullies and forest borders.

16.55 The Forestry Commission would manage the plantations along normal methods of forest working but great care should be taken over tree felling, to maintain the character of the park;

a all felling should be selective rather than on a group basis;

b successive fellings should be arranged to prevent

the appearance of a woodland which has clearly defined edges at different stages of regeneration;

c the shape of felled areas should reflect topography, giving a sense of penetration into the forest or towards a view;

d the effects on skylines should be considered before felling begins.

Proposals for access

16.66 The pattern of access by vehicles and footpaths within the park is shown in figure 16.4. The basic principle is that a clear demarcation should be made between areas that should be made highly accessible and therefore be most intensively developed, and those which should be relatively inaccessible and less developed.

16.67 The main means of access by car should be by a north-south road from the A173 a mile west of Gulseborough, through Hutton Lawcross, over Great Ayton Moor, down Lonsdale and joining the Kildale road a mile east of Kildale. A second, east-west road should join the north-south road in Lonsdale, passing through Bank House and west to Great Ayton. It is important however that both these roads are designed and maintained as tourist roads serving the park, and should not be improved to a standard where they will attract through traffic. The roads should be lined by a low embankment, to prevent cars from being driven off the road into adjacent woodlands.

16.68 Two types of provision should be made for car parking. A series of relatively large, terminal car parks should be located at the main points of entry into the park and a few nodal places within the park. Their location is shown on figure 16.4. In addition, the two roads should each have a chain of small car parks, little more than lay-bys, suitably located for viewing points, picnic areas, and places from which to start walks.

16.69 The existing tracks and footpaths in the park are related to the present activities, and are not always well related to the proposed new use of the area. A new system of footpaths will be necessary to offer a variety of opportunities for walking and pony trekking. These will include:

a well maintained and surfaced footpaths suitable for short walks by family parties or elderly people, easily accessible from the car parks, and leading to viewing points and places of interest;

b less well maintained, rougher tracks more suitable

for longer walks in the less accessible, more remote areas.

16.60 The final network of roads and footpaths should be well signposted and maps should be made available.

Proposals for recreation and leisure

16.61 A service and tourist centre for the park should be located in Lonsdale, near the intersection of the tourist roads. This should comprise a restaurant and motel, and information centre about the park.

16.62 Sites for camping and caravans within the park should be located, probably in Lonsdale and Sleddale, near the more remote areas suitable for long walks. Their exact location and design, including landscape treatment, should be carefully considered to avoid damage to the scenery. The sites should have suitable facilities to permit a stay of several days. More formal accommodation, recreation and service facilities (shops, garages, etc.) are available only in Great Ayton and Gulseborough.

16.63 The park contains a rich variety of natural habitats: open fenland, deciduous and coniferous woodlands, open moorland, boggy land, and streams in wooded valleys. These natural zones should be carefully managed in order that the delicate ecological balances are not upset. But they should be made accessible by well designed, signposted nature trails. The park also contains many man-made items of historical interest ranging from Captain Cook's Monument on Easby Moor, to the remains of slum, ironstone and jet mining, to archaeological features such as the tumuli on Kildale Moor. These, too, should be made accessible.

16.64 Finally, the existing provision for activities such as fishing, shooting, gliding or water recreation in the park is poor. The nearest open water, for instance, is several miles to the east, at Westworth Flotation but it is isolated, and inaccessible, and is used for public water supply. However, it should be possible to create open water in Sleddale by damming the river. The purposes of the park will be to provide for the recreation and leisure of fairly large numbers of visitors from Teesside. It has the natural qualities that make this possible, and it is well located. But great care will have to be taken in its planning and in the provision of facilities for sports and recreation to ensure that the best use is made of the park and that people's differing interests can all be satisfied.



Roseberry Topping

Summary

a The road system for 1991 is based on the requirements of the predicted traffic flows by that time. The construction of the system appears feasible but more detailed engineering studies will be required in places.

b The key problems in the realignment of the A15 are the design of its interchange with the east-west route, the realigned A66, which will be the cross-roads of Teesside; its interchange with the South Teesside Parkway; and its proposed realignment west of Billingham.

c The realignment of the A66-A1085-A1942 as the main east-west route has two problem areas, the section of the Northern Route going across to Middlesbrough central area; and the interchange with the Manton Motorway, linked with the reservation of a line for a possible Tees crossing near Middlesbrough Dock.

d Problems in the South Teesside Parkway are the design of the interchanges with B1385, and for the Hartington development; and on the west bank of the Tees, the connection of the western extension of the Parkway with the existing A15, the Eaglescliffe industrial estate and the B1273.

e The Stockton Motorway and Bypass and the Manton Motorway are both longer term proposals.

f The proposals for the hilly area of East Cleveland and its approaches are intended to give road access comparable in operating speed with similar roads in easier countryside, notwithstanding their greater relative cost and irrespective of the volume of traffic.

Roads in the urban structure policy

17.1 The general shape of the road system for 1991 to serve the recommended urban structure policy was illustrated in figure 6.2 and its definition described in chapter 5. It is important to stress that this road system is based on an analysis of the need for easy movement by road throughout Teesside but the specific proposals are no more than a recommendation of the required standards of roads and a preliminary definition of their centre lines. In general, the road system was defined on maps at a scale of six inches to one mile, from which it will be clear that further study will be needed before the precise alignments of the proposed roads and the design of inter-sections can be determined. These studies, in plan and profile throughout the whole road system, should be carried out as soon as possible for the purpose of development control and to expedite the implementation of the proposals for construction during the first ten years.

17.2 The recommended road system appears, at this level of generalisation, to be both feasible and capable of implementation. In some instances, however, the

practical problems of planning and road design have necessitated a more thorough examination on plan and in profile at a scale of 1/2500. This was the case for instance with the realignment of A66 through Thornaby and North Middlesbrough (the Northern Route). The likelihood of variation in the final alignment of such roads from that recommended in the urban structure policy is consequently smaller than for the other roads in the system. In other cases, problems have been identified that can be resolved only by more detailed engineering studies though these are very unlikely to have any repercussions on the road system as a whole or on urban structure policy.

17.3 The division of urban roads into primary, distributor and local access roads according to their functions is now accepted practice. The majority of the new road construction is directed towards the completion of a primary system of roads whose function will be to carry the major volumes of traffic through the urban area but segregated as far as is possible from other urban activities. In many instances the new road proposals have been described as motorways. This need not imply their legal classification as such nor that they should be constructed to the design standard appropriate to a rural situation, but it does imply that access to the road would be permitted only at grade separated junctions, that is where two conflicting streams of traffic cross at different levels.

17.4 The design criteria that have been used in formulating the primary road system are shown in table 17.1. In general a design speed of 60 m.p.h. has been adopted only for such complex proposals as the Northern Route around central Middlesbrough. The main objective rather has been to set design criteria which are as high as conditions permit without introducing fluctuations in operating conditions from one part of the road system to another.

17.5 In some instances the predicted 1991 volumes on primary roads can be adequately accommodated by the improvement of existing roads, usually to dual carriageway standards; such roads need not necessarily have full control of access or total grade separation. The main exceptions to this are described later in this chapter.

17.6 In general, this new road construction or improvement is likely to be needed for the distributor and local access roads as they will use the existing street system from which through traffic will have been attracted on to the primary road system. However, construction of new roads will be required in Middlesbrough and Stockton central areas at points where overloading will probably occur prior to the completion of the primary system, and in areas of new development. Allowance

Table 12.1. Highway design standards

road	design speed (mph)	radius of curves (ft)		minimum weaving speed (mph)	gradients		sight distance (ft)	
		desirable	absolute minimum		desirable	maximum	desirable	absolute minimum
reigned A19	70	2,800	1,500	48	3%	4%	500	600
reigned A66-A1065-A1042								
a. Hartburn to A15	60	2,100	1,100	40	3%	4%	400	475
b. Middlebrough Barriers Round	80	1,400	750	38	5%	8% down	425	380
c. End of Middlebrough to Goslington	60	2,100	1,100	40	3%	4%	400	475
d. Goslington to Redox	60	1,400	750	38	4%	6%	425	380
e. Redox Central Area	40	900	450	25	4%	5%	300	240
South Teeside Parkway	30	2,800	1,500	45	3%	4%	550	600
Stockton Motorway								
a. 61274 to Barbours	60	2,100	1,100	40	3%	4%	400	475
b. Stockton Central Area	60	1,400	750	38	5%	8% down	425	380
c. South of Stockton to Parkway	60	2,100	1,100	40	3%	4%	400	475
Stockton Bypass	60	2,100	1,100	40	3%	4%	500	600
Marine Motorway	60	2,100	1,100	40	3%	4%	400	475

has been made for such construction in the estimated total cost of the road system.

17.7 It is necessary to emphasise that the road system for Teesside has been formulated within the context of urban structure planning as a whole, not solely in terms of engineering or traffic criteria. The final design and construction of the road system equally should take place in a wider context of which several aspects deserve special notice. The new views of Teesside to be opened up by the primary road system and their effects on planning were noted in chapter 15. The landscape treatment of the road system should receive careful consideration by the participation of landscape architects in the early stages of the design of new road works.

17.8 The problem set by traffic noise should also receive careful treatment. The primary road system has been designed with the express purpose of attracting a high volume of traffic. The effects of the noise from this traffic must be minimised: first, by ensuring that, for instance, houses are not built too close to the roads, and that high buildings likely to reflect sound are sited away from these roads; second, by the planting of trees and vegetation alongside the road, in order to absorb sound; or third, by earthworks, for instance, placing a

road in a cutting or by creating earth banks at the side of the road. Detailed studies would have to be made of the appropriate action in any particular case at an early stage in the design of the road.

The realignment of A19

The interchange with the realigned A66

17.9 The most important commitment for improving the road system of Teesside is the realignment of the A19 from Crathorne to Hartburn roundabout, with a new bridge across the river Tees between Thornaby and Middlebrough. And the most important new proposal is for an east-to-west route joining the A66 from Goslington, passing Middlebrough central area, South Bank and Redox. The intersection of these two routes will be the focus of the new road system.

17.10 Because of the priority attached to the realignment of the A19 and part of the realigned A66, this interchange will be completed at an early stage in the construction programme. It must be designed to accommodate all bearing movements on separate carriageways. A sketch design of the interchange system and the volumes of traffic it is likely to carry by 1991 is shown in figure 17.1.

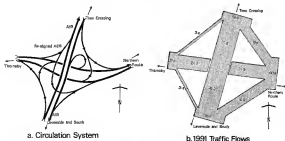
Figure 17.1
RE-ALIGNED A19/A66
INTERSECTION

a. Circulation System

- through motorway
- directional ramps
- > direction of traffic

b. 1991 Traffic Flows

1200-12 300 vehicles per
24-hour day, two-way



The A19 south of the A66 interchange

17.11 The design of this section is currently being casted out by Dolbels, Sandford, Rowatt & Partners. Points of access to the road are proposed at Mendale Road, the South Teesside Parkway, the A1044, the Hilton-High Laven unclassified road and for the Levenside development. It then joins the existing line of the A19 south of Corthorne though this latter section should be improved in standard.

17.12 The interchanges between the aligned A19 and the South Teesside Parkway is of great importance, and its construction would have to be staged. Initially, traffic from A19 eastwards to A1044 will be light but it will increase in volume once the Parkway has been built and the housing development at Hemington has been completed. After this stage, and even more so after the westward extension of the Parkway has been completed as far as Inghilly Barwick, the east-west movement of traffic will become considerable. Any scheme for the initial design of the interchange between the A19 and the Parkway must make due allowance for the subsequent improvements that will be necessary. Both the initial and the final stages of the design of this interchange are complicated by the presence of St Helias Wood and the railway on the west side of the proposed interchange. The problems of its design in stages are illustrated in figure 17.2.

The A19 north of the A66 interchange

17.13 The realigned A19 crosses the existing A66 and the new Tees north of the main interchange with the realigned A66. The precise clearance of the Tees bridge for navigational purposes is under discussion but it is likely that a height of 60 feet may finally be set. Ground conditions north of the river are bad and the recommended line follows the existing A1130 (a dual carriageway) until just south of Billingham Bottoms roundabout.

17.14 Two alternative routes can be postulated for the line of the A19 from the vicinity of Billingham Bottoms to north of Wolsleton:

a a new line, passing west of the existing A19 road, west of the new housing development at Billingham, west of Wolsleton to an interchange with the improved A66, Hartlepool to Seaford road, just north of Wolsleton;

b improvements to the existing line of the A19 through Billingham, an eastern bypass to Wolsleton connecting with the improved A66.

17.15 In terms of engineering and traffic design, it is possible to argue that the latter alternative may be preferable as it makes use of the existing dual carriageway through Billingham and the committed proposal for the eastern bypass to Wolsleton. In addition, the western realignment of the A19 could not be constructed in stages if it would function only when its entire length were completed.

17.16 However, there are reasons for favouring the acceptance of the western realignment as the preferable long term solution and it has accordingly been shown as part of urban structure policy. These reasons are:

a the amount of residential development proposed between Wolsleton and Wynyard will make necessary a new road access to this area;

b the proposed realignment could be an integral part of the design for a country park, including the creation of a lake at Billingham Beck (see chapter 16);

c the existing line of the A19 would have to be considerably improved in the long term if it were to be the only north to south route and would sever the new suburbs of Billingham now under construction west of the A19 from the rest of Billingham;

d it would be possible to construct most of the new realigned route in the initial stage as a single carriageway and this might compare favourably with the alternative cost of improvements to the existing line of the A19.

17.17 The agency for improving the existing line of the A19 comes from the need to relieve congestion at bottlenecks such as Billingham Bottoms and Wolsleton. Temporary measures, such as a car bridge at the former, should be considered until a more permanent solution can be provided.

17.18 It is important that the choice between the existing A19 and the western realignment on a new route should be made in a full planning context. At this stage, it seems probable that the western realignment should be recommended. If, however, detailed engineering studies make a convincing case for adopting the existing line of the A19 this would have repercussions on the recommendations for the Wolsleton-Wynyard development and the Billingham Beck country park.

The realignment of A66-A1085-A1042

The A66 west of the A19 interchange

17.19 The main east to west route through Teesside west of its interchange with the realigned A19 will initially join the existing A66 between Middlesbrough and Thornaby. The increasing volume of traffic will soon require the construction of a new road, the Thornaby bypass, parallel to and south of the existing road which would continue to serve local traffic. This new section of road will have some effect on Teesside Park. Reasonable though it should be capable of construction without affecting the main track.

17.20 Further west, the new road would pass through Thornaby and cross the river Tees via a new bridge south of the railway bridge. This crossing was selected from alternatives ranging from Bass north of Victoria Bridge to that originally reserved for the South Stockton and Thornaby bypass. The northern line, however, would involve a slow crossing of the river, and expensive bridging of the railway. Both it and the southern line would present difficulties for giving easy and convenient access to Stockton. The recommended line is the shortest route through Thornaby and would form an effective boundary between housing redevelopment to

Figure 17.2
RE-ALIGNED A19/
SOUTH TEESIDE
PARKWAY
INTERSECTION
Construction Stages

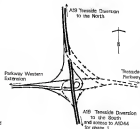


Figure 17.3

THE NORTHERN ROUTE

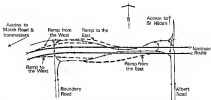
Access to Middlesbrough Central Area

— through motorway

- - - - - ramps to and from motorway

— ground-level circulation roads

➤ one-way traffic



the south and industrial and commercial development to the north.

17.21 The road would follow the line of the Darlington-Saltburn branch railway closely on its south side west of the river Tees, but there should be no access to Bowesfield Lane as a connection at this point would attract traffic through the Parkfield housing area south of Stockton. Two new access roads would be required to serve the Bowesfield industrial area. The first would be along a realigned Boathouse Lane from Bridge Road, and the second a connection from Yarm Road. The primary route would pass between the railway and the proposed C.E.G.B. substation to the west of Bowesfield Lane forming an intersection with the proposed Stockton Motorway, described below. This intersection could be built on what is now waste land. A difficulty in the design of the intersection will be bridging the railway.

17.22 West of this intersection the road deviates south of Eaglecliffe Foundry and the British Viqueen Factory and crosses Yarm Road and the railway line to link with the eastern end of the Elton bypass now under construction. This alignment differs from the line reserved by the Ministry of Transport for the Stockton and Thameby bypass.

17.23 The westward continuation of this route would be the existing A66 road, improved by bypasses to Long Newton and Elton and it is understood, connected directly to the A1 southwest of Darlington. The line for this main approach from Darlington has been chosen to take advantage of existing and committed road improvements to the A66. Arguably, a more desirable line would be further south, serving the Airport and joining the A1 south of Darlington. Considerations of stage construction rule out the possibility of this more direct line and the Airport is best served by improvements to the B1273.

The Northern Route

17.24 The section of this route immediately east of the realigned A166 forms a northern bypass to Middlesbrough central area; it is known as the Northern Route. The first point of access to and from the new route would be near Newport roundabout, Newport Bridge, which at present carries 25,000 vehicles a day, is expected to carry 32,000 vehicles a day by 1991. The new Newport roundabout should be large enough to carry the expected traffic with the Northern Route flying over but with ramp connections in both directions. The final choice on whether the Northern Route should be over or under the roundabout depends on the relative costs of each alternative and whether the Northern Route and the roundabout can be built together. Consideration should be given to building the roundabout first, to give temporary relief to congestion.

17.25 From this point eastwards the Northern Route will pass between the railway line and the gas holders north of Cannon Street. An easement for the three-lane dual carriageway could be achieved if the existing gas holders were replaced by high pressure gas holders but there is no information on whether or when this might occur. The route would follow the railway as closely as possible allowing for intersections, thus utilising an existing line of easement.

17.26 Access to Ironmasters would be improved by providing a new bridge over the railway near Matz Bridge connecting with an intersection on the Northern Route. Access from this intersection would also be provided to the factory just south of the railway and to the northwest of central Middlesbrough.

17.27 The most complex section of the Northern Route lies between Boundary Road and Albert Road, the means of access from the route to Middlesbrough central area (see figure 17.3). In this stretch, the following principal traffic movements will have to be catered for:

- a east-west traffic on the Northern Route itself, which would be constructed above ground level;
- b traffic moving between the Northern Route and the central area:
 - (i) traffic to and from the west, using the Albert Road access;
 - (ii) traffic to and from the east, using the Boundary Road access;
- c ground-level circulation around the north side of the central area, beneath the Northern Route;
- d access at ground level to St. Hilary's from Albert Road, and to Matz Road and Ironmasters, from Boundary Road.

17.28 The complexity of this intersection arises from the following factors:

- a the volume of traffic using this section of the Northern Route and wishing to avoid the central area;
 - b the proximity of other intersections on the Northern Route, to Ironmasters in the west, and with Merton Motorway to the east;
 - c the presence of recently constructed and valuable buildings, including Caron House, Dundas Street shopping arcade and the Middlesbrough railway station (see chapter 8).
- The design and construction of this section of the Northern Route is feasible and economical, even though it might involve the acquisition of valuable property, though not necessarily the named buildings.

The Middlesbrough Dock river crossing

17.29 The alignment of the Northern Route east of Albert Road is complicated by the problem of a further crossing of the river Tees near Middlesbrough Dock.

This was discussed in chapter 7, paragraph 7.81 and it was recommended that although there is probably no immediate justification for including the construction of such a crossing in the period to 1991, there is a reasonably strong case for making provision for its future construction if it does become a feasible proposition.

17.30 The problem that this poses is illustrated in figure 17.4. If the crossing is not a feasible proposition, then the alignment of the Merton Motorway and the east-west route should be in one form. This is the recommended pattern given in the urban structure policy and in chapter 8, figures 8.3 and 8.4. But if the new Tees crossing becomes a serious possibility, then these road alignments and intersections should change to the form shown in figure 17.4. This choice will therefore become critical when the design and construction of the Northern Route east of Albert Road becomes imminent.

17.31 A feasibility study for the Tees crossing should therefore be made, studying factors such as the technical possibility of bridge or tunnel; the navigational requirements of the river and the continuing need for maintaining a clearance of 380 feet; possible alignment for the approach roads on the north and south banks of the river; and the connection between the river crossing, the east-west route, and Merton Motorway. It will not be possible, however, to link directly into Merton Motorway if 160 feet clearance were still then to be required for the river crossing. Therefore, the study should include, as alternatives, a tunnel, sunk in a dredged channel, and a swing bridge with regular, published times of opening.

The realigned A1068 and Redeer

17.32 A new route is likely to be needed in the longer term, probably before 1991, to serve traffic moving along the south bank of the Tees as, by that time, the existing A1068 would be overloaded. The existing line of the A1068 could be improved, merely by solving the problem of junctions, but this would not be a satisfactory long term solution as it would tend to lead to an increase in traffic on the cross town route south of Middlesbrough central area. Several alternative alignments were examined for the section between North Crumby and South Bank. That which would cause the least inconvenience to the industrial estates in this area would be just south of the existing A1068.

17.33 Further east, the new road would pass through Gringetown, establishing a clear line of severance between housing to the south, and industrial development to the north. The existing A1068 would carry the

east-west route as far as Redeer where a new road should be constructed to provide reasonable access to the central area. This is described in chapter 11.

The South Teesside Parkway

The Parkway, east of the A19 interchange

17.34 The South Teesside Parkway east of the A19 interchange is mainly a committed road scheme for which an alignment has been favoured. However, the alignments for 1991 show that it should be of a higher capacity than had hitherto been thought, because of the additional proposals for residential development linking the Parkway at Harrington, Merton and Nunthorpe and the need to divert traffic from central Middlesbrough. The staging of the construction of the Parkway is important. There seems some point in making as much use as possible of the realigned A19 by constructing the western end of the Parkway between the realigned A19 and Harrington and Merton areas. On the other hand, the Parkway could be constructed for its whole length to a lower quality (initially as long as this were done within the framework of the overall design for the Parkway so as to minimise above construction work. This requires further detailed study.

17.35 The first intersection on the Parkway east of the A19 interchange would be with the A1044 to serve the western end of the Harrington housing area. Further east, a more complex intersection would be required south of the Bluebell Hotel. This intersection and the one with the A1044 must be considered jointly in their function of serving the proposed new housing development in Harrington, Coulby Manor and the proposed industrial estate at Harrington.

17.36 It is intended that traffic from Harrington and Coulby Manor should be induced to use the Parkway, and the realigned A19 or the Merton Motorway rather than existing roads such as Aukland or Merton Roads for travel to North Middlesbrough. But the design of the Bluebell intersection should recognise both this desirable objective for 1991 and the situation before the construction of the full road system.

17.37 There are many problems in the design of the interchanges for Harrington and at the Bluebell apart from those created by the need for phasing their construction in successive stages (see figure 17.5). For instance, the volume of traffic leaving the Bluebell interchange along B1365 will probably require a fly-over for the right turning traffic into Harrington. The amount of traffic likely to use this connection to Harrington and the junction to the south will need further study.

Figure 17.4
THE MIDDLESBROUGH DOCK
RIVER CROSSING

- 1 Middlesbrough Dock
- 2 New Tees
- 1991-1995 Railway Lines
- Use of New Tees Crossing and Merton Motorway if New Tees Crossing is to be constructed
- Continued Use of Merton Motorway if New Tees Crossing is not constructed
- Use of New Tees Crossing with or without New Tees Crossing



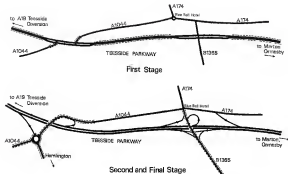


Figure 17.5
THE SOUTH TEESIDE
PARKWAY INTERSECTIONS
at A1044 and B1365



17.38 The next major intersection on the Parkway would be with the proposed Merton Motorway just east of the Northrop branch railway line. The Merton Motorway is envisaged as the major traffic route running north-east from Middlesbrough along the line of the railway. It seems likely that the interchange should be east of the railway where it will minimise interference with existing development.

17.39 There are later intersections on the Parkway east and west of Merton Motorway, at Merton Road (A172) and Gmmsby Bank (A171). Initially, before the construction of Merton Motorway, the Gmmsby Bank intersection would need to cater for movements in all directions but subsequently a half diamond intersection is envisaged. The existing reservation for the Parkway will not be adequate at this point.

17.40 The Parkway east of Gmmsby Bank passes south of the A174 and rejoins the existing road near Lazenby where it joins the newly constructed Gmmsby Road. Further east, the Parkway follows the existing road, which would be improved, and a new bypass to Kirkcaldy.

The Parkway extension, west of the A19 Interchange

17.41 It is proposed that a westward extension of the South Teesside Parkway be constructed from the A19

Interchange as far as the B1273 at the eastern end of the Urley Nook bypass now under construction. The section as far as the interchange with the southern end of the proposed Stockton Motorway is relatively straightforward. A new bridge will be required over the river Tees north of Eaglescliffe Golf Course. From preliminary studies, a possible alignment can be found which will involve a minimum alteration to the layout of the golf course.

17.42 The section between the western end of the river bridge and the Urley Nook bypass is likely to present some difficulty in view of current planning commitments and new housing construction at Eaglescliffe. More detailed studies should be made as soon as possible to determine the precise alignment and the form of interchanges required with the existing A10, the B1273 and the access to Eaglescliffe Industrial estate.

17.43 The urban structure policy shows a reservation for a possible long term southern extension of this road as a bypass and new river bridge west of Yarm. This is discussed more fully in chapter 15.

The Stockton Motorway and Bypass

The Stockton Motorway

17.44 The proposed Stockton Motorway would follow the line of the Eaglescliffe-Hartlepool railway from north to south through Norton and Stockton interchanging with the Thornaby Bypass south of Stockton and terminating in an interchange with the Parkway extension. The route, by following the railway, will minimise land severance. The main intersection would be with the access roads to Stockton central area.

17.45 An alternative route for this motorway was considered, along the Castle Eden branch railway through Hartlepool, which is to close. This would have the advantage of following an established right of way on a line with a reasonable alignment. However, the width of the right of way would be too narrow for a road of the required standard and there would be considerable nuisance to adjacent properties. But the main reason for rejecting the line is that it would be too far from central Stockton to fulfil the necessary function for this road, that of giving access to the central area.

17.43 The main section in the recommended line which cannot finally be settled at this stage is at Stockton gas works. The best line is on the eastern side of the railway through the gas works. If this does not prove possible at the time of its detailed design, an alternative line may have to be found east of, or less likely, west of the gas works. The latter alternative would involve at least realignment of the rail tracks and, possibly, changes to the station.

The Stockton Bypass

17.47 The Stockton Bypass connects the A177 for which a bypass should be built at Thorpe Thewles, and the assigned A39 near Billingham. The main interchange on this road would be with the north end of the Stockton Motorway. The design and landscape treatment of the bypass should be closely integrated with the design of the proposed Billingham Beck country park and the creation of the lake in the park.

The Merton Motorway

17.48 Merton Road is incapable of being improved to the standard required by 1931 and therefore a new high capacity route is proposed along the line of the Nunthorpe branch railway. It runs approximately southeast from the east end of the Northern Route, the first intersection being with the existing A1085. Provision should be made for the road to pass under the new North Ormsby bridge between Borough Road and Sewaton Street. The most probable line south of the A1085 would be to the east of the railway so there is more property to the west. The intersection between Merton Motorway and A174 can only provide for requests to and from the north because of its proximity to the junction with the Parkway.

17.49 Merton Motorway south of the Parkway should connect with the A171 road to Gaisborough. This will involve construction over Hambleton Hill, probably at a gradient of 8 per cent. Care should be taken over the landscape treatment of this section.

The road approaches to Cleveland

17.50 The road requirements of East Cleveland are decided by the need to provide reasonable access for the industrial estates recommended for Maresk, Skelton and Loftus. The main problem is that the hilly nature of the country means that it will be relatively more expensive

to provide roads to East Cleveland to a standard comparable with those in other roads of Teesside. If the cost of new or improved roads were related purely to accommodating the predicted volume of traffic, few proposals would be justified. A preferable criterion on these conditions is that the main road system should be designed and improved to a degree that permits a similar average speed of traffic as on other roads in Teesside.

17.51 If the road system is improved to this standard at a relatively early stage in the construction programme, the capacity thus provided should satisfy the needs of East Cleveland for many years, notwithstanding the increasing volume of traffic. The improvements suggested in the rest of the section are based on this. They will need more detailed engineering study at an early stage.

The approach via Maresk

17.52 The main approach to Cleveland is along the South Teesside Parkway. This follows the existing line of A174 beyond Kirkstatham but it should be improved to motorway standard by the construction of dual two-lane carriageways as far as the north end of the Maresk bypass. This bypass is a current commitment for a dual two-lane road though without grade separation.

17.53 East of Maresk, the existing B1287 should be improved to expressway standard as far as Skelton, and become the main route, joining with the A173 from Gaisborough. The A173 east of Skelton should be improved to give a 33-foot carriageway, with bypasses south of Bretton and Loftus, the line of the latter passing south of Carlin How and crossing Kilton Beck in the vicinity of the former railway.

The approach via Gaisborough

17.54 The A171 west of Gaisborough is currently being improved to dual carriageway standard. Traffic assignments show that a full bypass to Gaisborough will be required on its north side, as far as the A171 Wharby road, with a connection to the A173 Skelton road. The A173 between Gaisborough and Skelton would require some improvement.

17.55 There is a possibility of providing an alternative, new alignment for A173 by using the line of the former Gaisborough-Brookbeck-North Skelton railway. The feasibility and cost of this should be compared with that of improving the existing line of A173.



Skelton





Figure 6.2

KEY

— 1000 ft. or more

— 500 to 1000 ft.

— 0 to 500 ft.